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Making a Neighborhood of a Nation

THE TRANSCONTINENTAL TELEPHONE LINE

THE Spanning of the GREAT CONTINENT Unites the East with the West by Ties of Social and Commercial Intercourse.

"Far extends from side to side the field of words," and freed from all limitations of time and space, the mind may leap the continent in an instant, while the barriers of Nature still exist for things material.

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Telephone review
New York Telephone Company

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SPECIAL EDITION

THE TELEPHONE REVIEW

SUPPLEMENT TO VOL. VI, No. 1, JANUARY, 1915

EXTRA

COMMEMORATING THE COMPLETION OF THE TRANSCONTINENTAL TELEPHONE LINE, CELEBRATED AT THE HEADQUARTERS OF THE BELL SYSTEM, 15 DEY STREET, NEW YORK, JANUARY 25, 1915, AT 4 O'CLOCK, P. M.

EXTRA

BULLETIN

The President of the United States from Washington, D. C., talked with the President of the Panama-Pacific Exposition in San Francisco, Cal., over a transcontinental telephone line 3,600 miles long.

The President also talked with Mr. Thomas A. Watson in San Francisco and with Dr. Alexander Graham Bell in New York.

Dr. Alexander Graham Bell, the inventor of the telephone, talked across the continent to Mr. Thomas A. Watson. Mr. Watson was Dr. Bell's associate in 1876, when Dr. Bell invented the telephone. Mr. Watson constructed the first telephone instrument under Dr. Bell's direction.

Dr. Bell also spoke to Mr. Watson using a reproduction of the original telephone of 1876, thus showing the wonderful development of the Bell System and the capabilities of the transcontinental telephone line.

Hon. John Purroy Mitchel, Mayor of New York City, talked to Hon. James Rolph, Jr., Mayor of San Francisco.

Hon. George McAneny, President of the Board of Aldermen of New York City, talked with Mayor James Rolph, Jr., of San Francisco.

Hon. William A. Prendergast, Comptroller of the City of New York, talked with the President of the Panama-Pacific Exposition at San Francisco.

Mr. John J. Carty, Chief Engineer of the American Telephone & Telegraph Company, in New York City, talked with Mr. Thomas B. Doolittle, a telephone pioneer, in San Francisco.

Mr. Union N. Bethell, Senior Vice-President of the American Telephone & Telegraph Company, talked with Mr. George E. McFarland, President of the Pacific Telephone & Telegraph Company.

Public officials, representatives of civic organizations, presidents of national engineering societies, leaders in the commercial and financial world, prominent journalists, and telephone officials, witnessed and participated in the celebration.

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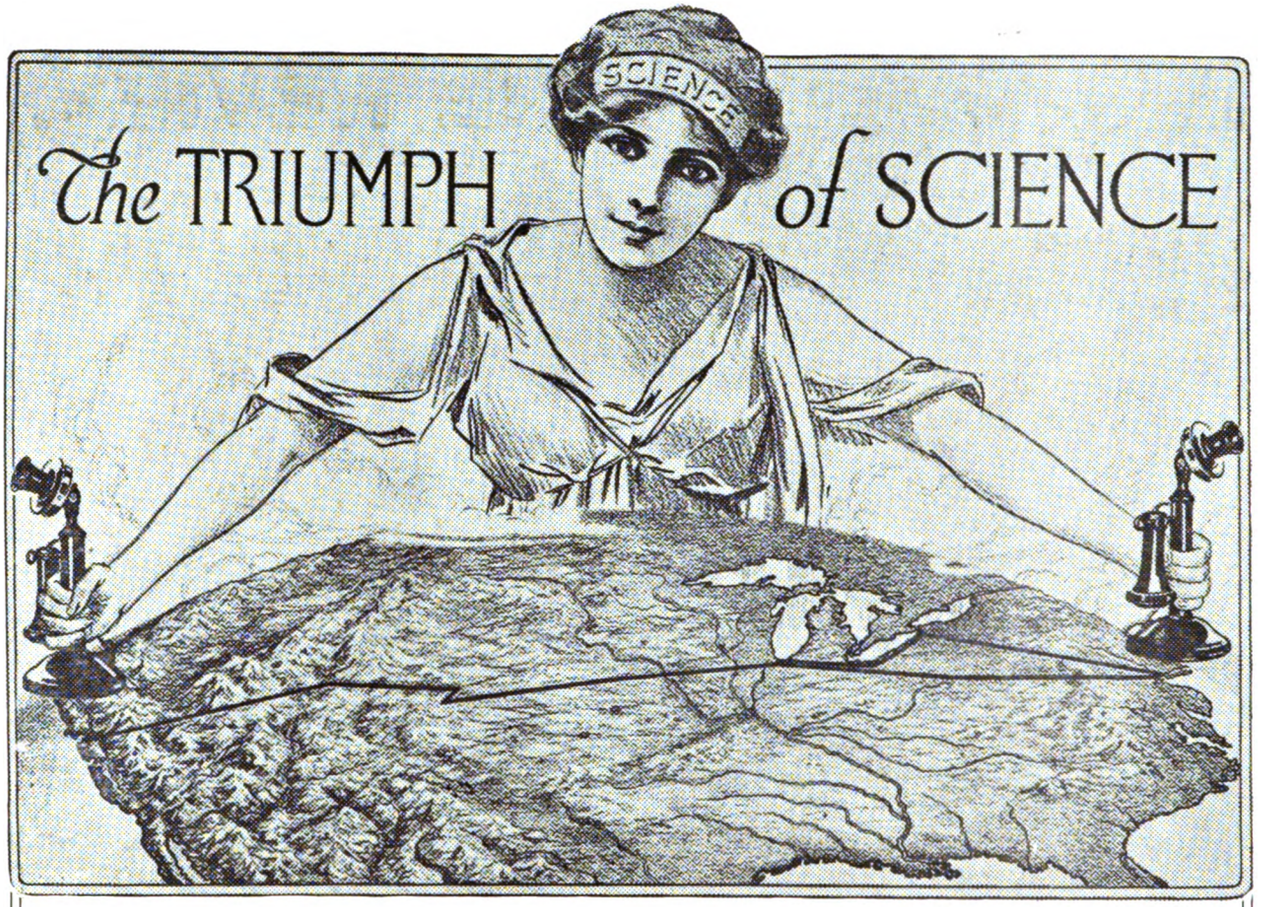

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This is but a step in MAKING A NEIGHBORHOOD OF A NATION, when in fact as well as in name there will be NO EAST, NOR WEST, NOR NORTH, NOR SOUTH, and ONE PEOPLE, a Hundred Million Strong, will be bound indissolubly by the BELL SYSTEM.

Speech from the Atlantic to the Pacific, from Puget Sound to the Gulf of Mexico, from the Great Lakes to the Rio Grande, will be as common as from house to adjoining house, and the sense of distance lost in the realization of

The Triumph of Science

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THE TELEPHONE REVIEW

J. D. NEWMAN, EDITOR

Published by the New York Telephone Company. U. N. BETHELL, President; WALTER BROWN, Secretary and Treasurer. Publication Office and Principal Place of Business, 15 Dey Street, New York.

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Remittance should be made by check, draft or money order, payable to the New York Telephone Company.

Statement by Mr. Vail

At the Centennial Exhibition at Philadelphia, the exhibit of the Bell System consisted of two telephones capable of talking from one part of the room to another. Faint as the transmitted speech then was it became at once the marvel of all the world, causing scientist as well as layman to exclaim with wonder.

Starting with these feeble instruments only, the Bell Company, by persistent study, incessant experimentation and the expenditure of immense sums of money, created an entire new art, inventing, developing and perfecting, making improvements great and small in telephone, transmitter, line, cable, switchboard, and every other piece of apparatus and plant required for the transmission of speech.

As the latest product of this unceasing organized effort there has been dedicated to the service of the public to-day a transcontinental telephone line three thousand six hundred miles long, joining the Atlantic and the Pacific and carrying the human voice instantly and distinctly between San Francisco and New York and Boston and Washington.

This telephone line is part of the Bell System of twenty-one million miles of wire connecting nine million telephone stations located everywhere throughout the United States and giving to the American people telephone service unparalleled among the nations of the earth. THEO. N. VAIL.

Statement by Mr. Bethell

The completion of the transcontinental line is not only an epoch-marking event in scientific development, but also the opening door to better conditions, commercial and social, throughout the nation. It means the breaking down of old barriers. By facilitating the exchange of information and ideas it brings the most remote points in the country closer together than were points lying within a single state a quarter of a century ago. It broadens mutual understanding and appreciation and thus aids tremendously in the advance of civilization.

This is one of the romantic and inspiring steps in the progress of the art as developed by our great and always mutually helpful organization which embraces in its ranks more than 150,000 men and women.

To the organization as a whole this event will have a significance that cannot be over-estimated; it will exert an influence that will not end with the day but go on working for better and greater results through years to come.

In some way, directly or indirectly, every efficient man and woman in the organization has contributed something to the achievement and, therefore, as a whole the organization merits congratulations. U. N. BETHELL.

Statement by Mr. Carty

This greatest of telephone lines, which to-day has been dedicated to the service of the public, must always be distinguished because through its copper wires the voice of the Chief Magistrate of this nation has, for the first time in our history, been transmitted from the seat of Government at Washington westward thirty-six hundred miles to the shores of the Pacific. Over this line the voice of President Wilson was carried with magic speed across rivers and plains and mountains, instantly reaching San Francisco where in clear tones it spoke his message of congratulation to men of achievement.

Unable to be present with us in person, Mr. Theodore N. Vail has nevertheless taken part in these ceremonies. By using the wonderful Bell System of organized men and organized wires he has talked to us here at New York from an island eleven hundred miles to the south, near the coast of Florida. From there he has spoken through the length and breadth of our land to the State of California, forty-four hundred miles away, thus attaining the longest distance ever achieved by the voice of man.

We are filled with grateful feelings that Alexander Graham Bell and Thomas A. Watson have to-day talked to each other over this now historic line. Dr. Bell was the first to conceive of the true method and apparatus for transmitting speech electrically, and Mr. Watson, following exactly the directions given to him by Dr. Bell, constructed with his own hands the first telephone. Bell was the first among men to talk by the electric telephone, and Watson was the first to hear.

There is before us an exact reproduction of this electric speaking telephone employed by Bell and Watson when first they talked to each other by wire. Through this instrument Dr. Bell has again talked to Mr. Watson, but this time how vast is the distance and how great the triumph.

Of course, he was not heard by any means so well as when he used our standard transmitter, but well enough to be understood, we may be sure, and loud enough to excite a most pleasing sentiment.

This original type of telephone talking over one of our modern lines, spoke across the continent more distinctly than it ever did from one room to another over the best line of former days. Thus does this homely first instrument give testimony to the marvelous improvements made in its plant by the Bell Company during these intense intervening years.

These improvements, incredible as they are in number and magnitude, are but one stage of our never-ending progress. They have opened to us new fields filled with the richest promise. They are not the end. They are but the beginning of the future Bell System which in effectiveness and useful service we confidently promise will surpass all that has gone before, so that in the future, as we have in the past, we will, in all things pertaining to the art of telephony, keep secure for our country the foremost place in all the world. J. J. CARTY.

(RECAP)

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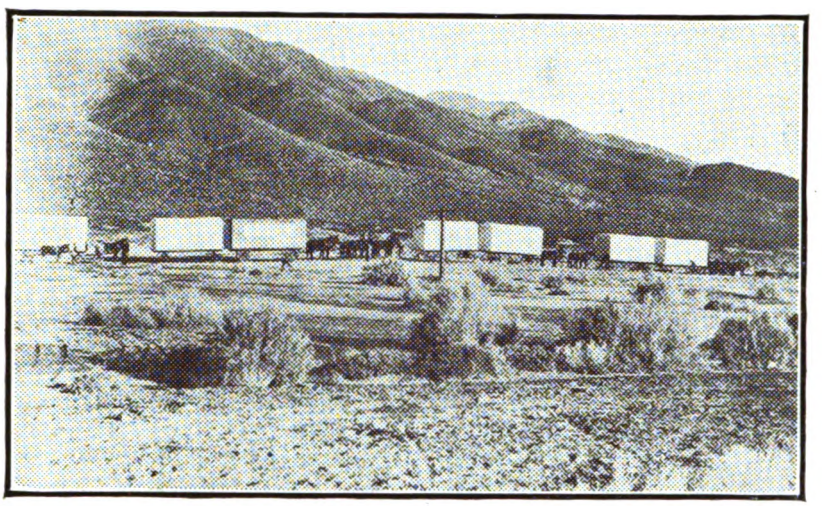
"Hello, 'Frisco!"

Across the Continent in Story and Picture

Father Knickerbocker Salutes Miss California by Telephone



Blazing the Trail for the Transcontinental Telephone Line

Less than forty years ago, Alexander Graham Bell, standing in a little attic at No. 5 Exeter Place, Boston, sent through a crude telephone, his own invention, the first spoken words ever carried over a wire, and the words were heard and understood by his associate, Thomas A. Watson, who was at the receiver in an adjacent room. On that day, March 10th, 1876, the telephone was born, and the first message went over the only telephone line in the world—a line less than a hundred feet long. The world moves a long way ahead in the span of one man's life. On Monday afternoon, January 25th, this same Alexander Graham Bell, sitting in the offices of the American Telephone & Telegraph Company, at New York, talked to this same Thomas A. Watson in San Francisco, over a wire stretching 3,400 miles across the continent and part of a system that includes 9,000,000 telephones, connected by 21,000,000 miles of wires.

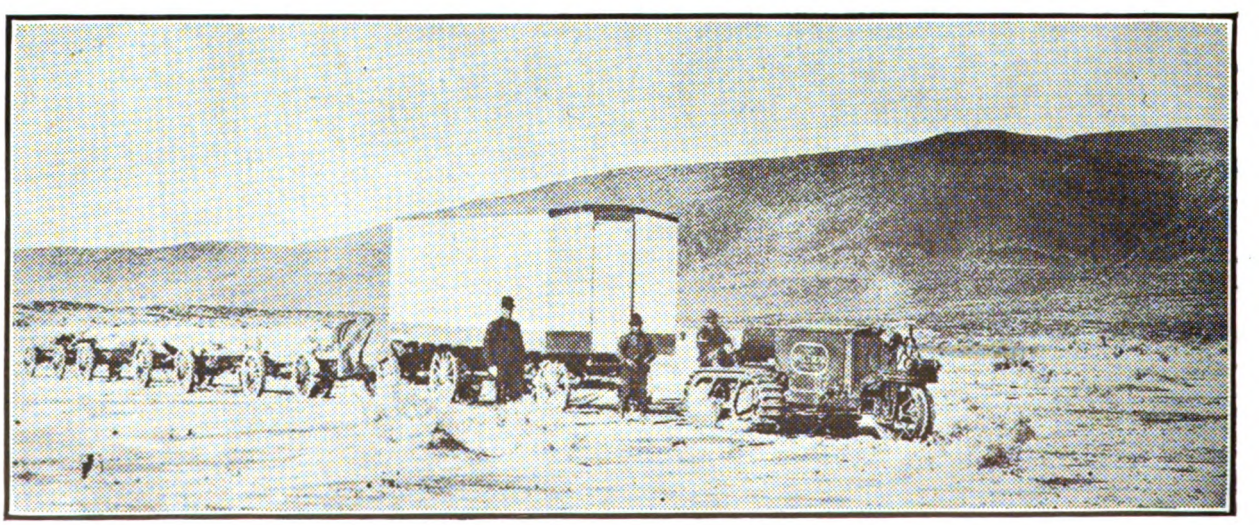
In that same memorable year of 1876, Dom Pedro de Alcantara, Emperor of Brazil, visiting the first telephone exhibition at our first great national show, the Philadelphia Centennial, picked up the receiver, listened as Professor Bell talked at the other end of the room, and, amazed at the wonder of the thing, cried out: "My God—it speaks." Had Dom Pedro lived to see the Panama-Pacific Exposition he could have heard Professor Bell talking to him, not merely from the other end of a room, but from the other side of a continent.

The Panama-Pacific Exposition itself, planned to celebrate the completion of the Panama Canal and the joining of the Atlantic and Pacific oceans, will mark a still closer welding of the East and West. When its gates are thrown open on February 20th, San Francisco will not only be nearer to New York through a shortening of its water ways, but will be in constant and instantaneous touch with it through the medium of speech. It is a curious fact, too, that this second great feat of engineering, this other canal, this even more intimate connection between the two seaboards, has been completed in the same year. Quietly, almost unnoticed, but steadily and bravely, while the gigantic steam shovels were cutting their way through the earth in the South, the engineers of sound and electricity were weaving their magic webs through the air and pushing on toward the Golden Gate. Their work has been less spectacular, it has excited little attention, but these men have met obstacles as hard to overcome as the Culebra slide, and they have conquered them. The long-dreamed-of Transcontinental Line is no longer a dream. New York can talk to San Francisco.

The Transcontinental Line Open

Monday, January 25, 1915, has taken its place among the momentous dates in the annals of science and human progress. On that day, in the presence of groups of prominent men on either coast, the Transcontinental telephone wires were given their first public test, and the completion of the line was formally celebrated. Distinguished men in the offices of the Pacific Telephone & Telegraph Company in San Francisco conversed freely with distinguished men on the Atlantic seaboard, and one more great chapter in the history of telephony was finished as Bell, sitting in the offices of the American Telephone & Telegraph Company in New York, talked to Watson across a continent.

There was no hitch in the programme, or any doubt as to the immediate success and practicability of the new line. Those who talked over the telephone did not raise their voices above the usual conversational pitch, and the replies came back from across the continent, clearly and instantaneously. There was no more effort, delay, or indistinctness than in talking across a table. Professor Bell



Fast in the Sand—A Tractor Rescues the Cook Wagon

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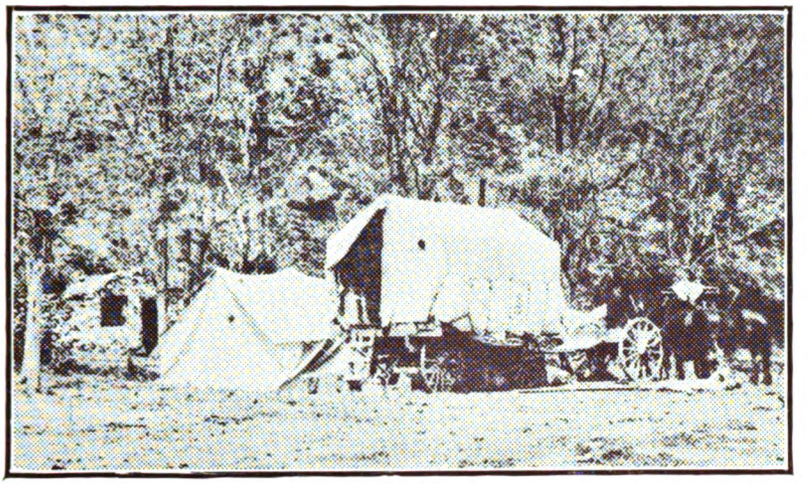


Making Camp. The Stone House on the Left Was Used as a Stage House Before the Days of the Railroad

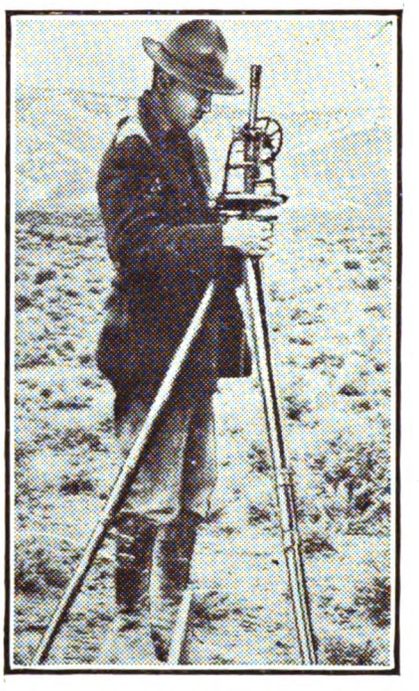
says that he thought out the telephone in Salem. A fitting place for its conception —there is witchcraft in it, and the most blasé of business men in the offices of the American Telephone & Telegraph Company on Monday felt something akin to uncanniness at the thought that his voice had gone across thirteen states, shot over prairies and through forests, hurtled through cities, climbed the Rockies, skimmed across the desert and reached the Pacific coast, and the answer had come back to him in an eye-wink.

A Dramatic Moment

There have been few more dramatic moments in the history of science than when the venerable Professor Bell lifted the receiver from its hook and called to Watson, the friend and fellow-workman of his youth, in far away San Francisco. There was a wonderful story in that first "Hello," a marvelous tale of miracle-working, of heroic struggle and sublime achievement. Few men have seen so great a dream come true, probably no two men before, in all the history of the world's discoveries and inventions, ever lived to see such magnificent results from work in which they had been the pioneers. Hardened telephone users as all of those present were, and accustomed to big events as most of them were, a hush that was tinged with awe, an almost solemn silence, fell on the assemblage as the great inventor talked to his associate. Every one felt that he was taking part in an epoch-making event, that, in the future, school children would be made to learn January twenty-fifth as one of the big dates in the world's scientific, commercial, and political history, one that ranked with that other day when "What wonders hath God wrought" was flashed over Morse's wire.

In the Space of a Lifetime

Most wonderful of all, perhaps, in the minds of those present at the opening of the new line was the fact that this achievement, the crowning glory of so vast and complex a system, had taken place within the space of a man's lifetime. On March 10th, 1876, Professor Bell, working away at the simple telephone he had invented, called to his comrade, "Mr. Watson, come here, I want you," and Watson heard that first of all telephone messages over the wire. In New York on January 25th, 1915, the same voice was talking and, in San Francisco, the same ear was listening, as on that spring day thirty-eight years ago, but under what different conditions! Then the struggling young inventor and his associate had just succeeded in producing the only telephone in the world and in talking over a few feet of wire. Ahead of them were years of ridicule for their invention, indifference to their plans, and opposition to their efforts. On this other great day they saw their simple



The Surveyor Sets Up His Transit to Start the Work

contrivance as part of a vast system joining together the country's greatest and most distant cities and serving the uses of 100,000,000 people. Not many men have seen so great a fulfilment of their early ambitions, no other invention has ever taken so great a stride in so brief a time.

It *has been* a tremendous stride, for when Bell invented that first feeble receiver, it was the beginning of telephones. There had been nothing like it or anywhere near like it in all the ages. It was a creation—as far as scientific apparatus was concerned, it was made out of nothing. More than that, this crude instrument—just capable of transmitting speech the length of a room—was all Bell gave to the art of telephony, but it was enough. The American Telephone & Telegraph Company and its associated companies have done the rest.

The Real Problem

Just what this "rest" means can be fully appreciated by those only who know the difficulties to be overcome by the telephonic engineer and the subtlety and delicacy of the forces with which he has to deal. The very minuteness of

More of the Surveyor's Job—Measuring the Span

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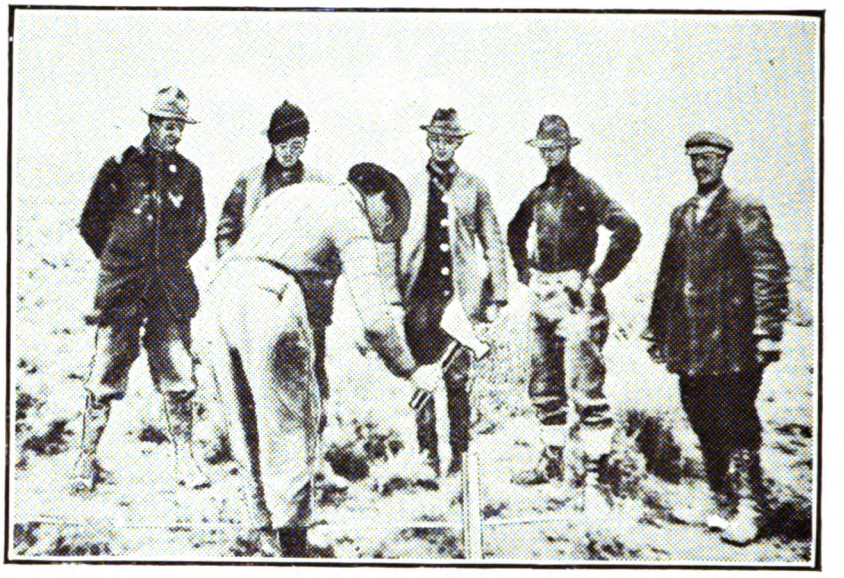
things makes his task herculean. Instead of having to figure on immense weights and masses, he is baffled by infinitesimally small fractions. His energies are devoted to conservation, and conservation of the most intense kind.

It was, perhaps, little more difficult to string wires from Denver to San Francisco than from New York to Denver, but the actual construction of the line was the least of the engineer's troubles. His real problem was to make the line "talk," to send something 3,000 miles with a breath as the motive power. In effect, the voyage of the voice across the continent is instantaneous; if its speed could be accurately measured, a fifteenth of a second would probably be nearly exact. In other words, a message flying across the continent on the new Transcontinental Line, travels, not at the rate of 1,160 feet per second, which is the old stage-coach speed of sound, but at 56,000 miles per second. If it were possible for sound to carry that far, a "Hello" uttered in New York and traveling through the air without the aid of wires and electricity, would not reach San Francisco until four hours later. The telephone not only transmits speech, but transmits it thousands of times faster than its own natural speed.



The Next Step—Driving the Stake

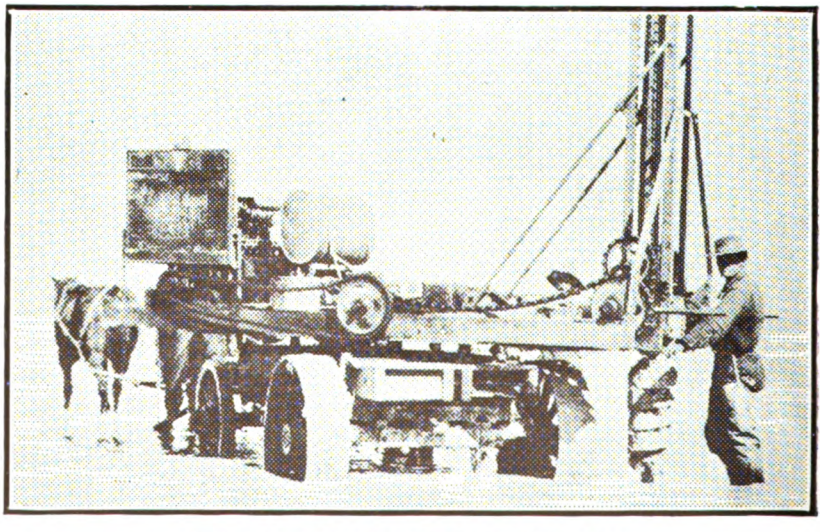
Some of the Difficulties of Hole Digging

But, while the telephone is breaking speed records, it must also guarantee safe delivery to these millions of little passengers it carries every few minutes in the way of sound waves created at the rate of 2,100 a second. There must be no jostling or crowding. These tiny waves, thousands and thousands of varying shapes, which are made by the human voice, and each as irregular and as different from the other as the waves of the sea, must not tumble over each other or get into each other's way, but must break upon the Pacific coast just as they started at the Atlantic, or all the line fails and the millions of dollars spent upon it have been thrown away. And in all this line, if just one pin-point of construction is not as it should be, if there is one iota of imperfection, the miles of line are useless, and the currents and waves and sounds and words do not reach the end as they should. It is such tremendous trifles, not the climbing of mountains and the bridging of chasms, that make the Transcontinental Line one of the wonders of the ages.

The engineer in telephony cannot increase his motive power. A breath against a metal disk changes air waves into electrical currents and these electrical currents, millions of which are required for a single conversation, must be carried across the continent and produce the same sound waves in San Francisco as were made in New York. Here is a task so fine as to be gigantic. In his "History of the Telephone," Herbert N. Casson says that the energy set free by cooling one spoonful of water just one degree, would operate a telephone for ten thousand years. It was to nurse and coax this baby current of electricity three thousand miles across the continent, under rivers and over mountains, through the blistering heat of the alkali plains and the cold of snow-capped peaks, that has taken the time and thought and labor of the brightest minds of the scientific world.

Solving the Problem

Never has been such a skillful and patient lot of trained nurses, though, as this invalid of a current has had. Be-



Boring Pole Holes Across Lake Humboldt, Nev.

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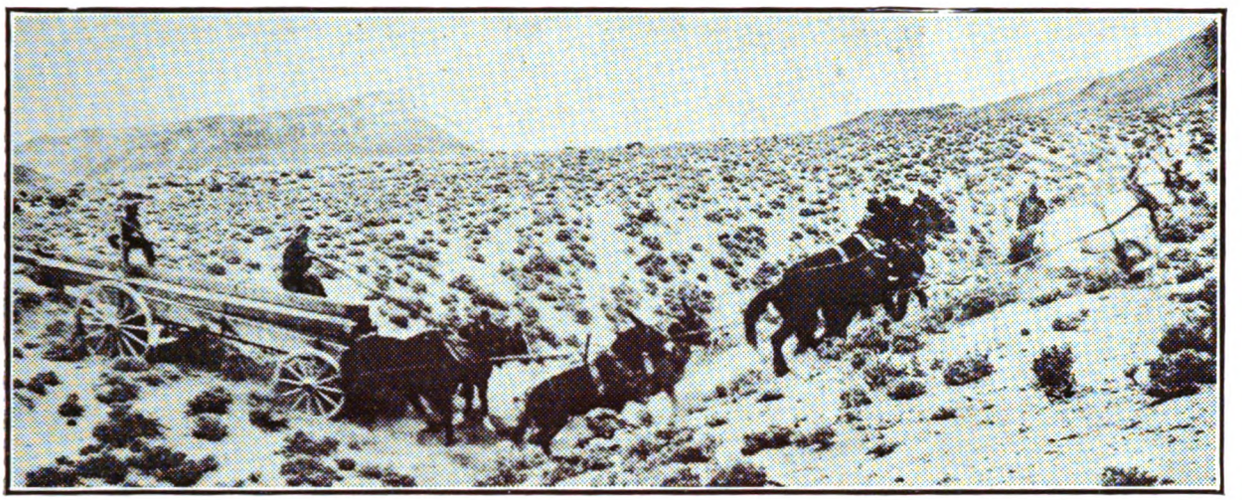


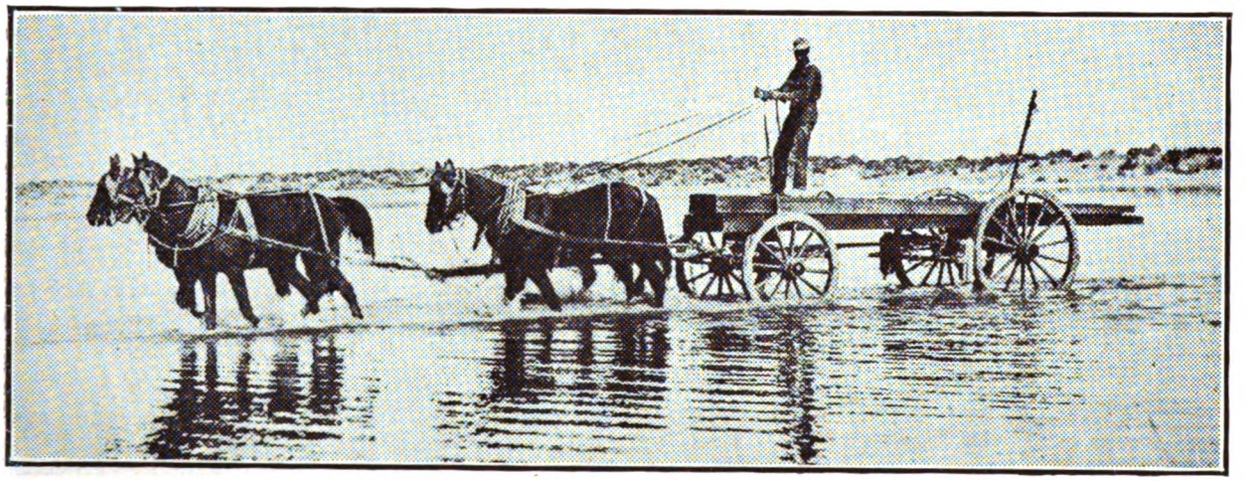
Over Mountainous Countries Paths Had To Be Made by Teams Distributing Poles

ginning with that first timid step in Boston, thirty-eight years ago, they have led the weakling on, mile after mile, to city after city, till it has reached the other coast.

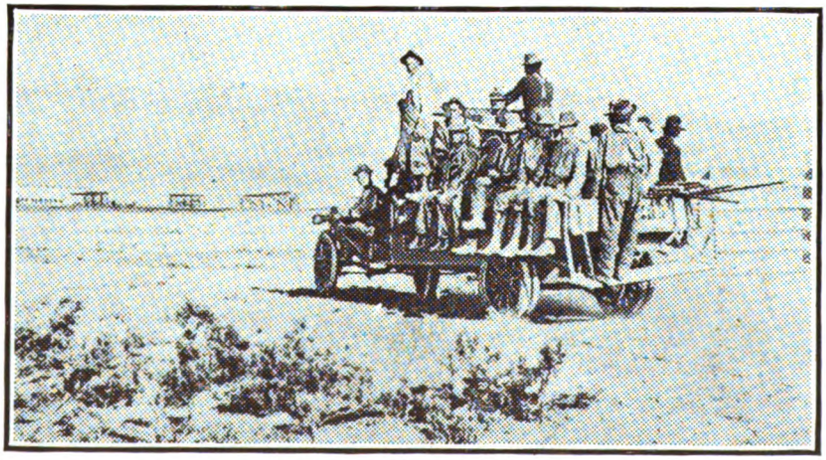
Who did it? Who made this wonderful achievement possible? Ten thousand men, beginning with Bell and Watson tinkering away at that first crude telephone in an attic, forty years ago. It has taken an army of thoughtful, conscientious, patient men, keen of brain and skilled of hand, striving day and night for the one great end—the perfection of a system and the conquering of time and space. In office, laboratory and shop, under the earth, high up in the air, they have thought and experimented and toiled, always aiming toward this idea of universal service.

There has been no isolated problem, literally as well as figuratively the development and perfection of the system has been "all along the line." The fight, this new "Winning of the West," has not been a duel, to be won by a single inventor struggling for the solution of some one big problem, but a battle, a campaign, in which thousands have helped to overcome a thousand hindrances and imperfections and difficulties.

When the telephone left the hands of Bell and Watson, it was "an essentially perfected instrument" in the eyes of the law, that is, it did what was claimed for it—it talked—but that was all. The diaphragm was simply an animal membrane tied around a piece of wood and in touch with a magnet. From this acorn the oak of the Bell System, nation wide, has grown. From this small beginning, the Transcontinental Line has been evolved, and it *has been* an evolution. In the words of President Theo. N. Vail, it is "the cumulative effect of improvements, great and small, in telephone, transmitter, line, cable, switchboard, and every other piece of apparatus or plant required in the transmission of speech." In all the 3,400 miles of the line there is no one spot where a man may point his finger and say, "Here is the secret of the Transcontinental Line; here is what makes it possible to telephone from New York to San Francisco." Rather, it is the perfection at every point that has brought this about. It is the development of the transmitter at New York



Across Lakes and Alkali Sinks Another Problem Was Encountered in Hauling Poles



Pole-Setting Crew Starting for Work. In This Section of Nevada Horses Were Soon Exhausted by the Salty Air

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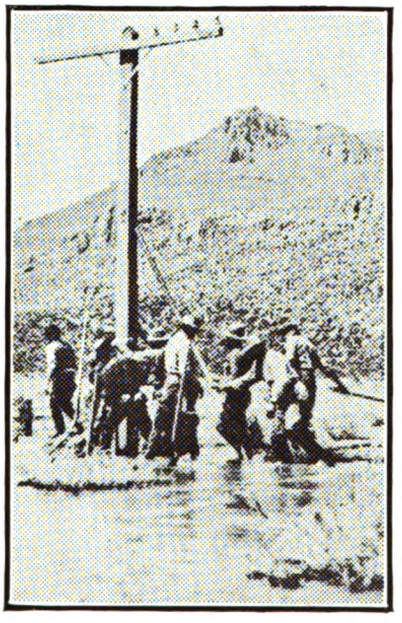
that makes the receiver at San Francisco do its work so well; it is the improvements in the receiver at San Francisco that causes the transmitter at New York to perform its functions so admirably; it is the perfecting of every inch of line and every bit of mechanism between them that enables the instrument at New York to talk and that at San Francisco to hear.

The Magnitude of the Task

In spite, however, of the fact that, compared with the electrical problems, the mere engineering task of constructing the line may appear simple to the scientist, no one can run his finger over the route of the new line on the map without being impressed with the magnitude of the undertaking. The data and figures are tremendous. The line crosses thirteen states, it is carried on 130,000 poles. Four hard-drawn copper wires, .165 inch in diameter, run side by side over the entire distance, establishing two physical circuits and one phantom circuit. One mile of a single wire weighs 435 pounds, the

Setting a Pole in the Uplands



Pole-Setting Crew at Work in a Swamp

weight of the wires in the entire line being 5,920,000 pounds or 2,960 tons. This, of course, is the transmission wires alone. In addition to these, each physical circuit uses some 13,600 miles of fine hair-like insulated wire, 4-1,000 of an inch in diameter, for its loading coils.

Simply to string this immense amount of wire across the continent, to set the poles and insure insulation, to conquer the innumerable difficulties offered by land and water, forests, mountains, deserts, rivers and lakes, was in itself a task of no mean magnitude. The Panama Canal is hailed as one of the greatest achievements of the world's workers, as it is, but the almost invisible lines of the Bell System, considered simply as to labor and cost, constitute a monumental achievement.

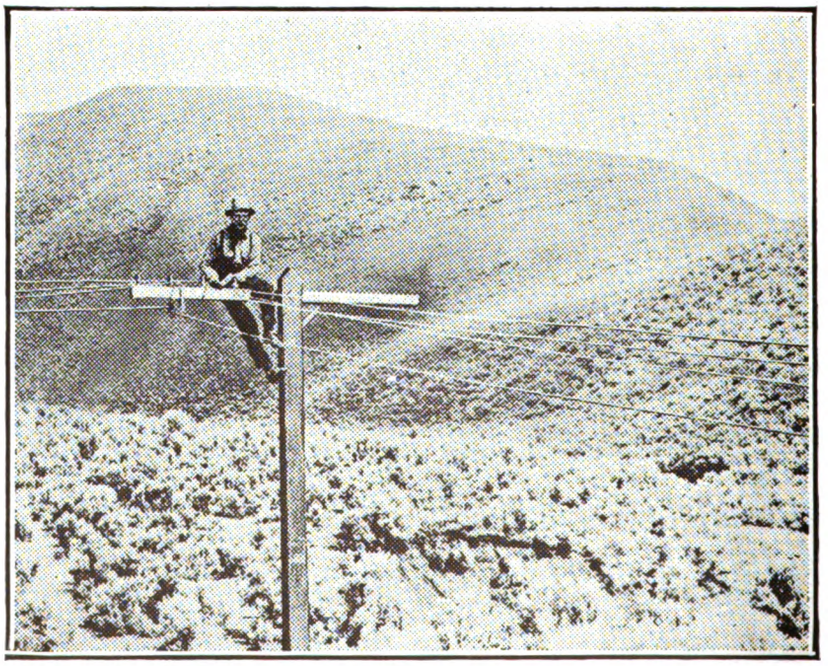
The Canal was begun nine years ago and has cost $310,000,000; within the same space of time the Bell Company has spent twice that amount in its engineering construction work alone.

Two Leaders in the Work

The building of the Transcontinental Line depended on the solution of no one isolated problem, nor will the glory of it be given to any one isolated individual, but there are a few names that will always stand out above the rest in connection with it. There must be great generals for armies that win such victories.

For many years this line from ocean to ocean has been the dream of Theodore N. Vail, president of the American Telephone & Telegraph Company, the goal toward which he has pushed and toward which he has steadily led his associates and the army of his employees. Not the dream of a dreamer, but the prophetic vision of a practical, forceful, capable man, a man of unlimited business energy and knowledge, who could see anything in telephony except impossibilities. He not only cannot see them, but will not admit that they exist; he does not find the word "impossible" in his dictionary of engineering terms. Almost from the beginning of the telephone, his energy and enthusiasm, his dauntless optimism and ambition in everything relating to its perfection and promotion, and his idea of "universal service," have dominated the company and made enthusiasts of every one connected with it in great things or in little.

At his side through most of these years has been a slightly built, lithe, keen-eyed man, who never has to be told but once when a great thing is to be done. A nod, and a line goes to Denver; a word, and it stretches to the Pacific coast. That is John J. Carty, Chief Engineer of the



The Next Step Is to String the Wires

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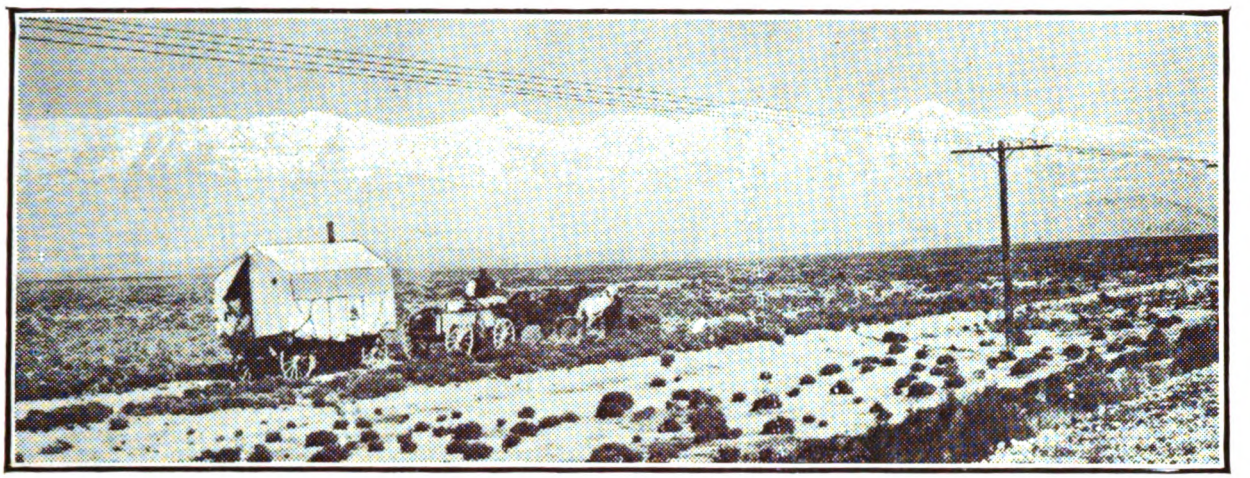
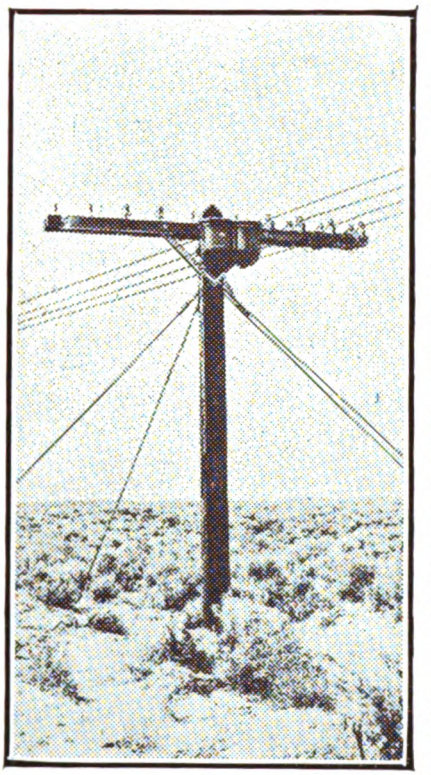


Moving Westward Again to the Next Stop

American Telephone & Telegraph Company. A leader among the scientific men of all nations and honored by their rulers for his distinguished services in engineering accomplishment, his wide knowledge, his keen judgment, and his indomitable energy have combined to make him one of the great factors in telephone achievement and advancement. He is the wizard of the wires. Long ago he said this great thing could and should be done, and through the great banks of silence that separated the East from the West, this Goethals of electricity has been cutting his way, year by year, until the great canal of human speech is done.

Others have played big parts in this drama of human endeavor and achievement, and thousands have given their share of thought and labor, but, whoever is forgotten or remembered, the names of Vail and Carty will be linked with this new triumph of science as long as man talks to man.

There has been no greater achievement in the history of the Bell Company, none in the history of telephony, few in the history of the world. The gain to science is great. Immeasurably more precious, however, is that to the nation, and incalculably greater are the benefits to commerce and society. What the Transcontinental line means to the future of the country, what it will bring about by drawing the East and West closer together, how much of increased prosperity and happiness these thousands of miles of wire will insure, no man can gauge.



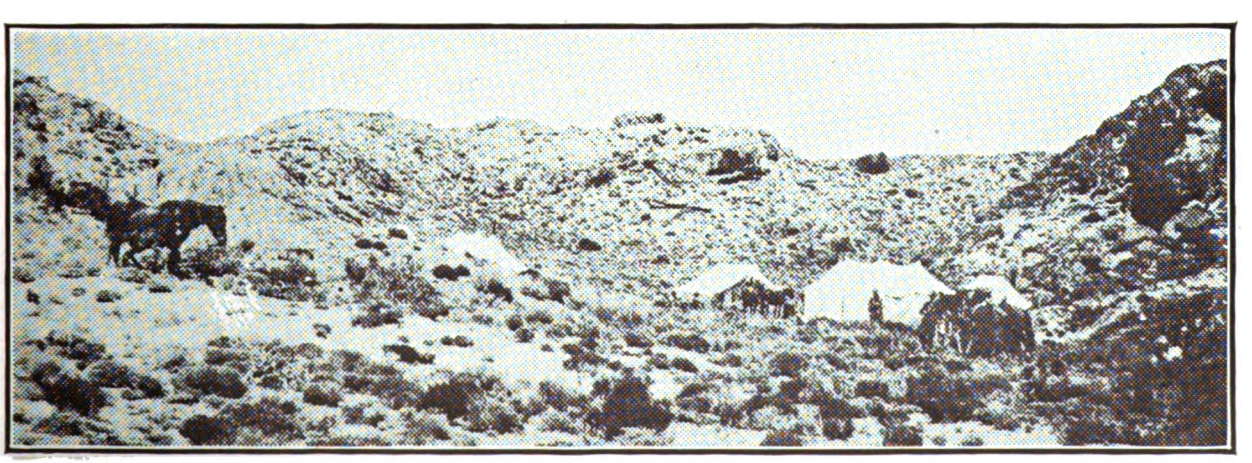
Loading Pot on the Line

What It Means to the Country

One of the most prominent of the guests who talked over the longest of long-distance telephones at the celebration, said:

"I thought I had gotten over wondering at the miracle of the telephone, but what I have just done amazes me as much as the first words I heard over the wires many years ago. Even now I can hardly conceive that it is possible. I have talked over long dista ces many a time before, but this is far beyond the limit. Chicago I am used to, even Denver; but this talking from the Atlantic to the Pacific gives one a thrill. It appeals to the imagination—it is a theme for poets.

"What it means to the country, it is impossible to estimate. For one thing, it is a final blow to sectionalism—it has put a seal on the fact that there is no longer East and West, North and South. Not even the railroads or the new canal have done or can do so much toward bringing the States closer together and uniting them more firmly, not only in commerce, but in thought and language. Provincialism will become rarer and rarer, localisms, dialects—all such things that depend on isolation—are getting to be an impossibility in the United States, and the telephone has been the greatest agent in bringing about this desirable condition. It is hard for people to get very far apart when they are in such constant touch with one another, and I know of nothing which is doing more to strengthen the bonds between individuals



Camping in the Nevada Brush

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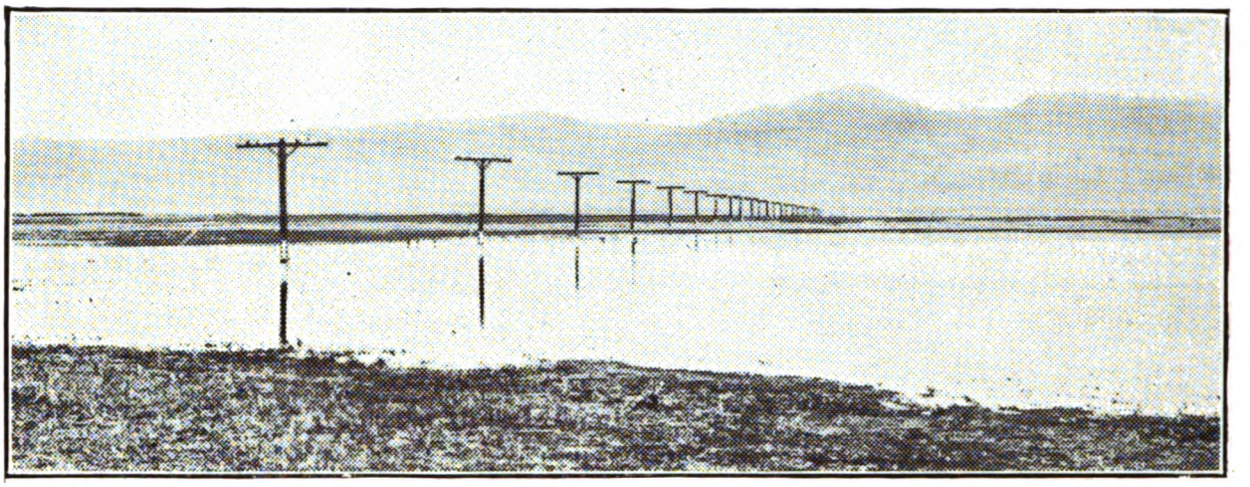


Crossing a Bad Stretch. Miles of Poles Are Set Across Lakes Varying in Depth from 18 In. to 3 Ft.

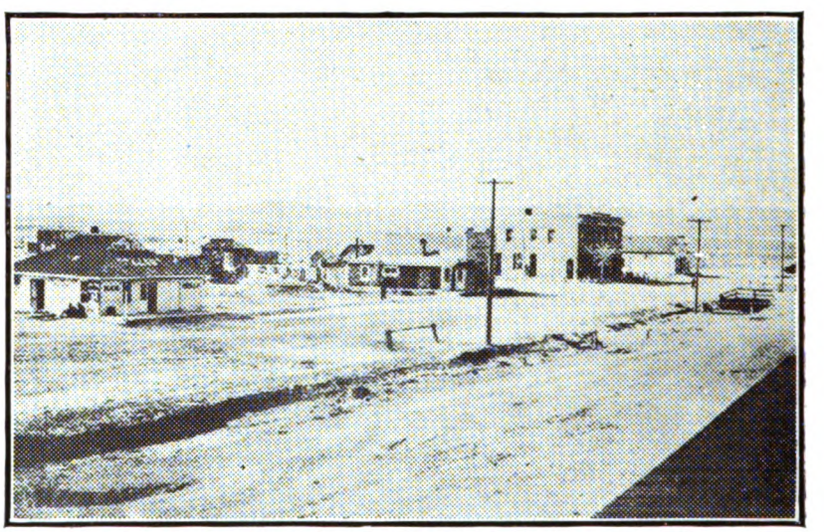
and communities than the network of wires the American Telephone & Telegraph Company is spreading over the country. So much importance do I attach to this idea, that, extreme as the statement may seem, I believe quite firmly that, had the telephone system reached its present perfection previous to 1861, the Civil War would not have occurred. The wires would not have let the North and South drift so far apart."

Universal Service

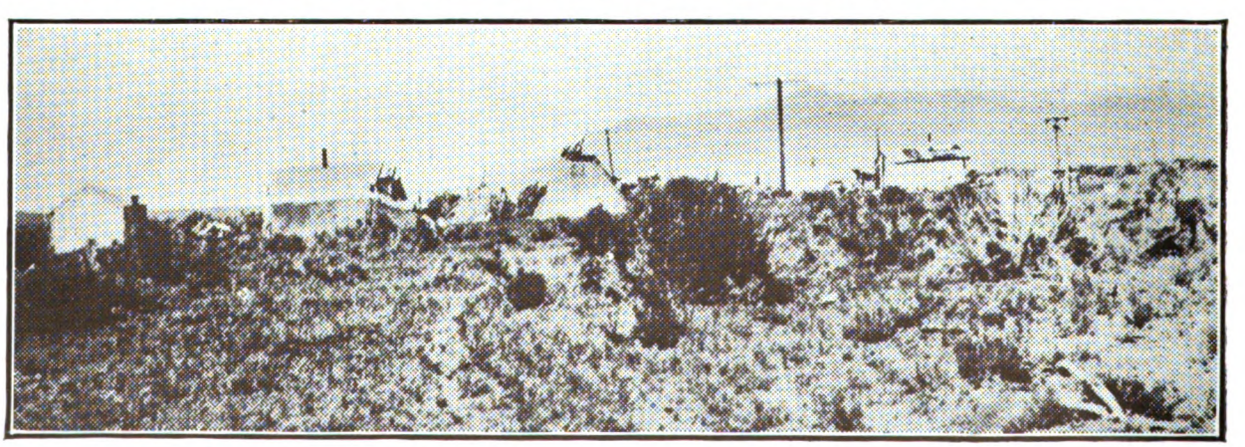
The new Transcontinental Line is a concrete exemplification of the possibilities of universal service and a justification of the arguments for a single system. Under no other plan would such a line be possible. This line, 3,400 miles long, and joining the Atlantic and Pacific, is part of the great Bell System of 21,000,000 miles of wire, connecting 9,000,000 telephone stations located everywhere throughout the United States. Comprising this system are the American Telephone & Telegraph Company and its associated and connecting companies, thousands of them, giving instant and perfect communication among 100,000,000 people.

The opening of this line is the culmination of the Bell idea of universal service —in presenting it for the use and convenience of the public, the American Telephone & Telegraph Company renders an account of its stewardship. It has fulfilled its promise and, not only in itself, but as an earnest of what is to follow in future development, this nation-wide line proves that it is the intention of the American Telephone & Telegraph Company to make it possible for every man who can talk, to talk over the telephone to every man who can hear.

The telephone was born here and it has reached its greatest perfection here; under no other conditions, except such as exist in the United States, could it have come to its highest development. With its dozens of telephone systems, Europe has no long-distance line to compare with this. The Transcontinental Line is a culmination of an art that was born in the United States, the high-water mark of a science that was created and has been developed entirely by American genius and enterprise. It is the highest achievement of practical science up to to-day—no other nation has produced anything like it, nor could any other nation. It is *sui generis*, it is gigantic—and it is entirely American.



Occasionally the Line Touches "Civilization"—Hazen, Nev.



Extremes of American History—The Transcontinental Telephone Line Passing Through an Indian Village

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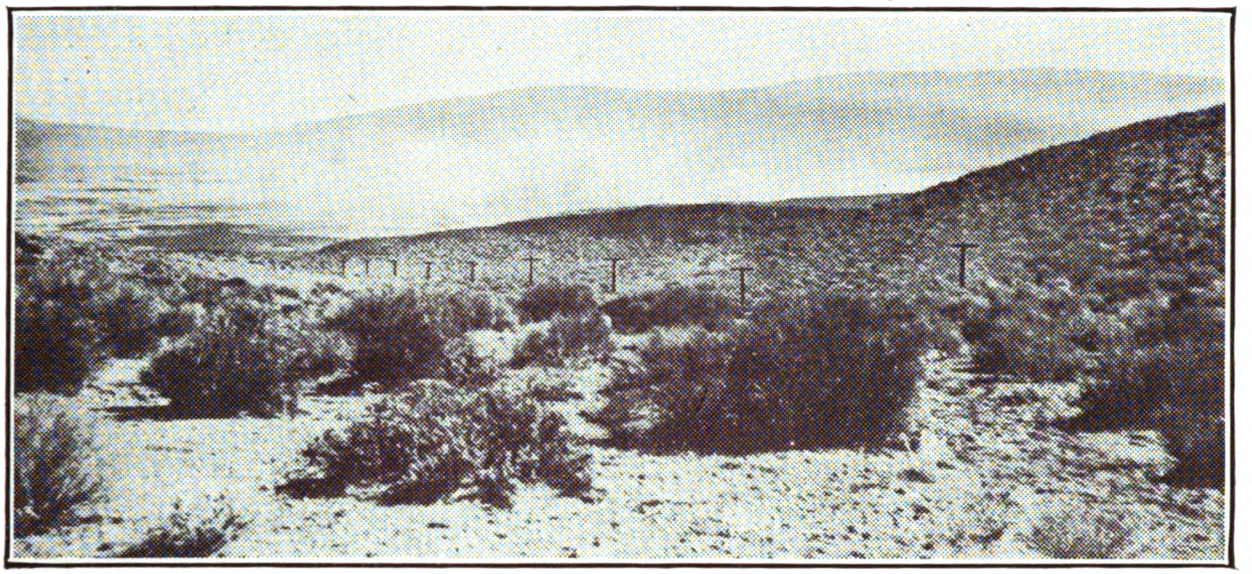


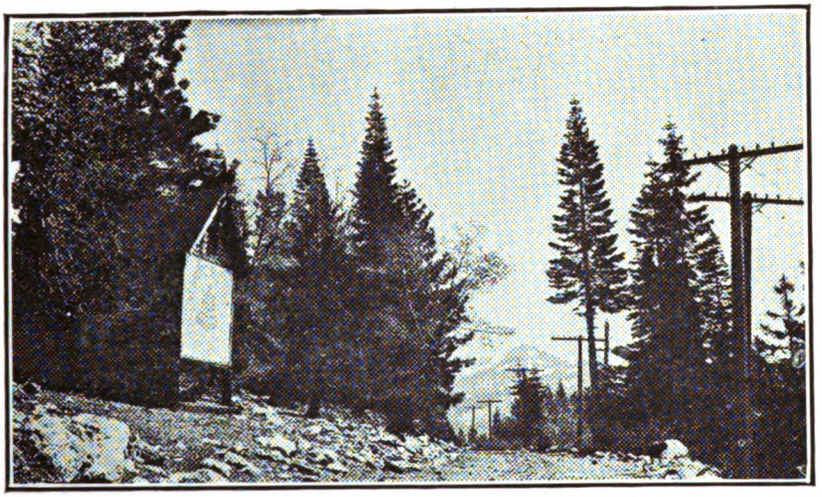
Sand and Dust Storm Along the Transcontinental Telephone Line

Critical Moments in Nature

Destiny often is determined in a flash. What Dr. Newell Dwight Hillis calls "critical moments in nature" occur constantly, but since time began these moments have passed unnoticed save by those able to see and seize the opportunities presented and so shed new light upon the world of the unknown.

Galileo found a lens in the eye of an ox and gave the world the telescope; Watts saw steam lift an iron lid and the theory of steam power was born; Columbus, sailing in search of a new passage to the Far East, noticed an unknown wood drifting near his vessel and discovered a new world. Alexander Graham Bell, leaning over a crude machine connected by wire with a similar instrument in another room, heard the sound of a twanging reed come over the wire and gave the world its greatest known means of intercommunication. Each man recognized a "critical moment in nature" and so made destiny.

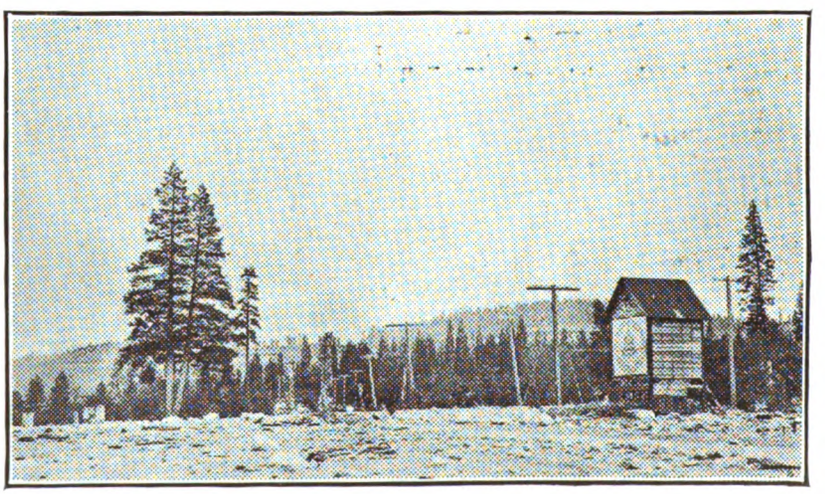
The completion of the Transcontinental Telephone Line, however, is the result of the seizure of hundreds of "critical moments in nature." One after another these moments came to the men who have been struggling to solve the mysteries of an art that was unknown thirty-eight years ago. And because they were able to see the significance of the moments that arose, they have now succeeded in bridging the continent with a talk highway that puts east and west within speaking distance and eliminates the barriers of distance in the United States.



Linemen's Shelter House, Three Miles West of the Summit of the Sierra Nevada Mountains, California

Linemen in a Blizzard

Probably nothing can better suggest the difficulties which telephone men have to encounter and the hardships they endure in some parts of the country, than the accompanying photographs of shelter houses—one a mile west of Crystal Lake, Cal., and the other three miles west of the Sierra Nevada Mountains in the same state. These houses are built along the Transcontinental Line in isolated mountainous regions and are frequently occupied by the linemen as they maintain the telephone line during the cold and storms of the winter months. The houses contain a couch, a small stove, cord-wood, and canned provisions, and are used as a temporary shelter by the men when caught in a blizzard. The latter last, on an average, from two to three days, the snow frequently drifting to depths of from 15 to 20 feet.



Linemen's Shelter House, One Mile West of Crystal Lake, Cal.

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Some of the Leading Personalities Who Made the Transcontinental Telephone Line

Alexander Graham Bell, Inventor of the Telephone — Thomas A. Watson, Associate of Prof. Bell in 1876

Theodore N. Vail, President American Telephone & Telegraph Company

U. N. Bethell, Senior Vice-President, A. T. & T. Co. — J. J. Carty, Chief Engineer, A. T. & T. Co.

Bancroft Gherardi, Engineer of Plant, A. T. & T. Co.

C. E. Scribner, Chief Engineer, Western Elec. Co. — Frank B. Jewett, Asst. Chief Engineer, Western Elec. Co.

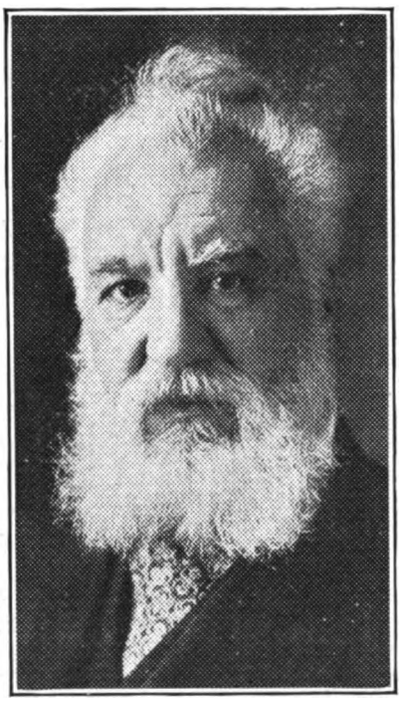
ALEXANDER GRAHAM BELL

Alexander Graham Bell has had the rarest of human experiences. He has lived to see the dreams of his youth come true. When he talked into a replica of the first telephone transmitter at the celebration of the completion of the New York-San Francisco telephone line, there were nine million telephones in the Bell system serving 100,000,000 persons. Forty years ago Bell talked of sending the human voice over electric wires and men gaped at him in pity.

The inventor of the telephone was born in Edinburgh, Scotland, on March 3, 1847. He was the son of Alexander Melville Bell, the dean of British elocutionists and inventor of the system of "Visible Speech." The boy was educated at Edinburgh and London, and acquired a smattering of music, electricity, and telegraphy. At the age of sixteen he taught elocution in British schools, and by the time he was of age he had met several noted scientists who encouraged him in his studies of sound.

In 1870 he went to Canada and the next year came to Boston as Professor of vocal physiology in Boston University. His system of teaching deaf mutes won immediate recognition, and his success encouraged him to open a school of his own. He went to live at the home of five-year-old Georgie Sanders, one of his pupils, in Salem and in the Sanders cellar after school hours he started a series of inventions that were to culminate in the telephone. For three years he worked with tuning-forks and magnets and batteries and in 1874 he had evolved the idea for what he called his "Harmonic Telegraph." This was a device for sending a number of Morse messages over a single wire at the same time by utilizing the law of sympathetic vibration. Bell used a telegraph transmitter and receiver, an electro-magnet, and a flattened piece of steel clock spring.

One day in the winter of 1874 Bell took his harmonic telegraph to the electrical work-shop of Charles Williams at 109 Court Street, Boston, where Thomas A. Watson was employed. Watson made six instruments at Bell's instructions and thereafter devoted most of his time to working out in brass and iron the ideas that came pouring out of Bell's active brain. The two young men labored day and night at their experiments in the Williams workshop and out at Salem. All the while there was a dream that haunted Bell. It was that somehow, some day, he could get an electric wire to carry the human voice. On June 2, 1875, after months of countless experiments on the harmonic telegraph, something happened that convinced Bell that at last he was on the right track. One of the transmitter springs of his telegraph instrument stuck and the magnetized steel generated a current that sent a faint noise over the electric wire to Bell's receiver. Thereafter it was a question of working out details. This was all the proof Bell needed to persuade him that the principles were right.



Alexander Graham Bell

On March 10, 1876, in a boarding-house at 5 Exeter Place, Boston, where the two were experimenting, Bell in his room on the top floor put his mouth to the telephone and said:

"Mr. Watson, come here, I want you." Watson came rushing into the room shouting: "I heard you; I could hear what you said."

Bell decided that he had made sufficient progress to justify him in exhibiting his invention at the Philadelphia Centennial. He was shoved into a corner and overlooked by the public until Dom Pedro, Emperor of Brazil, who knew Bell as a master of acoustics, happened along. Bell explained the telephone and persuaded the Emperor to listen at a receiver while he talked. Dom Pedro dropped the instrument, exclaiming: "My God, it speaks," and the amazement of the distinguished visitor attracted attention to its cause. Bell and his invention were soon the main features of the Centennial.

Bell returned to Boston to persuade an incredulous public that he had a practical means of instantaneous communication. It was no easy task. With a few loyal friends behind him he did heroic missionary work, lecturing up and down New England, everywhere prophesying that some day men would talk as readily from Boston to New York as from one room to another. The press reflected the universal scepticism; funds ran low—those were dark days for the young inventor. But finally in August, 1877, when Bell's patent was sixteen months old there were 778 telephones in use and the pioneers decided that the time had come to organize the business. "The Bell Telephone Association" was created with no capital and a membership of four men,—Bell, Watson, Gardiner G. Hubbard, Bell's father-in-law, and Thomas Sanders, father of Bell's pupil and sole financial backer of the telephone.

Bell was an inventor, not a business man, and after 1877 he had little active connection with the organization of the telephone industry. He married in that year and went abroad to help introduce the telephone in England. But before he sailed, he suggested to Watson that as soon as the telephone became a matter of routine business the two should begin experimenting on flying machines. Watson turned to building battleships but Bell, always a long way ahead of his time, took up the problems of flight with his characteristic energy.

In February, 1913, *The Scientific American* printed an account of patent No. 1,050,601 just issued. Dr. Bell received this for a vertical balancing rudder for aeroplanes, thirty-seven years after receiving patent No. 174,465 for the telephone. In May, two years ago, he announced an attempt to be made by one of his assistants to cross the Atlantic in an aeroplane in seventy-two hours. To invent what has been called one of the seven modern wonders would satisfy most men, but it did not satisfy Alexander Graham Bell.

While Theodore N. Vail and his associates were busy making Bell's membrane transmitter a universal household servant, Professor Bell was inventing a telephone probe for the painless detection of bullets in the human body and receiving for it the degree of M.D. from the University of Heidelberg. In 1883 Dr. Bell's name once more appeared before the public, associated this time with the names of C. A. Bell and Sumner Taintor in the invention of the graphophone. A little later he returned to his first love—the study of acoustics—and organized a movement for the teaching of speech to the deaf along the lines of visible speech.

It has always been Dr. Bell's practice to keep complete records of his scientific researches, and the volumes into which

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these records are bound now number several hundred. They tell a story of an intellectual life of almost unprecedented activity. A recent visitor to Dr. Bell's home at Washington was permitted to examine records made from 1908 to 1913. There were thirteen volumes, each as thick as a law-book and each containing 500 pages. The index to one of these volumes covered such subjects as experiments on air-craft, the scientific breeding of sheep, the utilization of waste heat, a new metric system, experiments in preserving food, notes on eugenics, and the biological history of a cat. Dr. Bell said to his visitor, and this was but two years ago:

"I have never felt stronger intellectually. My mind has a greater power of concentration than it ever had. It seems to be quicker and it does not tire along the lines in which I am interested. I sometimes work for 18 hours at a stretch."

Dr. Bell has received many honors. The French Government awarded him the Volta Prix in 1880. He received a medal from the London Society of Fine Arts in 1902. He is an officer of the French Legion of Honor. At one time he was President of the National Geographical Society and he is a member of the National Academy of Sciences, the American Philosophical Society, a fellow of the American Academy of Arts and Sciences, and a member of the American Association for the Advancement of Science. He spends his winters in Washington and his summers near Baddeck, N. S.

THOMAS A. WATSON

Thomas Augustus Watson, associate of Alexander Graham Bell and first superintendent of the Bell Telephone Company, was born at Salem, Mass., on January 18, 1854. He attended the public schools of Salem until he was thirteen years old when he began to earn his own living. He had a love for science that sundry jobs such as clerking, bookkeeping and carpentering failed to satisfy and he did not find a vocation that really held his interest until he entered the electrical workshop of Charles Williams at 109 Court Street, Boston. Mr. Williams encouraged individual initiative among his employees, and Watson at work among call-bells, annunciators, galvanometers, telegraph keys, relays, registers and printing telegraph instruments, soon showed the good effects of such a policy. He experimented for himself in the fascinating fields that the new science of electricity was opening out, and after hours he delved into other branches of science. A steam-engine that he built when business was slack was the embryo of the biggest shipbuilding plant in the United States, of which he was many years later to become the head.

Williams, though his force never numbered more than 40 or 50 men, had one of the largest and best fitted electrical shops in the country, and to it there came inventors who wanted their ideas set down in brass and iron. Because of his mechanical ability and ready comprehension of new principles, Watson was their favorite workman.

He was busy with some experimental torpedo exploding apparatus which he was preparing for Moses G. Farmer, when Alexander Graham Bell came into the shop one day in the early winter of 1874. At that time Bell was full of his designs for a "Harmonic Telegraph." When Watson finished his work on the torpedoes he made half a dozen pairs of the harmonic instruments for Bell. This was the beginning of an association that was to continue for years. Bell's active mind provided enough ideas to keep Watson steadily employed. The two experimented together, out at the Sanders house in Salem, where Bell was living, and in the Boston workshop until June 2, 1875.

On that day while the two young men were at work on the exasperating harmonic instruments, one of Watson's transmitter springs stuck, and the slight noise that Watson made in attempting to free it sounded in Bell's receiver. This was enough to convince Bell that a wonderful idea which he had some time before confided to Watson could be worked out. He dropped his harmonic telegraph scheme and set out to make electrical wires carry the human voice. All the experiments that followed concerned themselves with the working out of details.

On March 10, 1876, Bell and Watson had moved to a boarding house at 5 Exeter Place, Boston. They had run a wire from Bell's room on the top floor to a room below where Watson stood with a receiver at his ear. It was over this wire that Watson heard the first words ever uttered by the telephone.

"Mr. Watson, come here, I want you,"

Thos. A. Watson

said Bell, and up the stairs ran Watson shouting: "I heard you, I could hear what you said."

Watson was but twenty-two years old when the telephone was patented. Bell was seven years older. Upon such young shoulders lay the task of persuading a sceptical public that wires could talk. They had behind them, it is true, a small group of enthusiastic men, some of them willing to lend financial aid, but it was the missionary work done by Bell and Watson that turned the tide in the telephone's favor. Up and down the country went Bell telling what he had done, and for proof he let the myriad of scoffers hear Watson's voice across the wires. Watson recited poetry. sang songs, and shouted himself hoarse into the ears of audiences addressed by Bell. Although he spoke at every one of Bell's lectures, to this day Mr. Watson has never heard his associate deliver an address. He was the invisible but convincing testament to this new miracle's verity.

Fred Gower, a Providence newspaper man, was one of the earliest of the converts that these lectures were making on every hand. He proposed a scheme for a dual lecture in the course of which Watson spoke from a central point to two halls at the same time. It was at one of these, in which Watson talked from Middletown, Conn., to Bell at New Haven and Gower at Hartford, that Watson made his last appearance as *"deus ex machina."*

He let Gower tell the public what the telephone would mean and went back to his laboratory to make some of the lecturer's promises true. This was in 1877, and for two years Watson worked steadily at developing some of the principles of the art of telephony. The engineering department of the Bell Telephone Company consisted of Watson and two others. To-day Chief Engineer J. J. Carty of the American Telephone & Telegraph Company has 550 engineers and scientists at work under his direction. Mr. Watson's name is associated with the invention of the magneto-electric call-bell and with the automatic switch, which was the culmination of a series of experiments he started at that time. He held a number of offices in the first Bell Company and was Superintendent from 1878 until 1881.

In 1881 Mr. Watson's connection with the telephone industry ceased and he went abroad for a two years' rest. On his return to this country at a time when Dr. Bell began experimenting on airships, Mr. Watson became interested in battleships. He associated himself with those who were endeavoring to revive the glory of the days when every New England harbor was white with the shipping of the Seven Seas. From 1884 until 1900 he was a member of the shipbuilding firm of F. V. Wellington & Company.

By 1900 he had become one of the leaders of the shipbuilding industry and it was Mr. Watson who founded the great Fore River Ship & Engine Company at Quincy Point, Boston Bay. At this concern, one of the largest in the country, many of our navy's dreadnoughts now in service were constructed. The fame of the company went abroad and foreign governments sent in orders to Quincy Point.

In 1903 when the battleships Vermont and New Jersey, the protected cruiser Des Moines, and the destroyer MacDonough had been completed under Mr. Watson's direction, Rear Admiral Francis T. Bowles, head of the naval construction work, was called to the Presidency and Mr. Watson retired from active business.

In 1913 he delivered an address before the third annual convention of the Tele-

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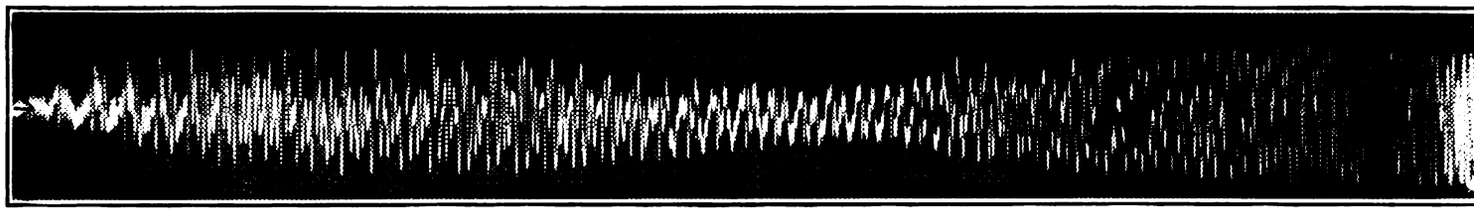

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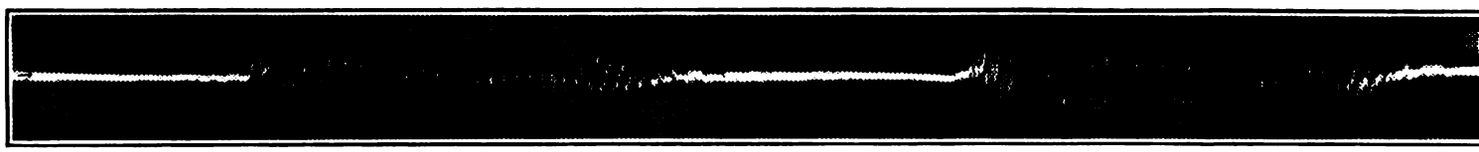

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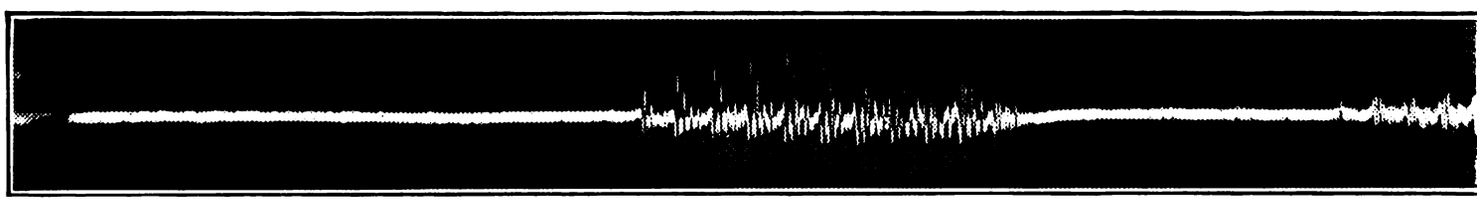

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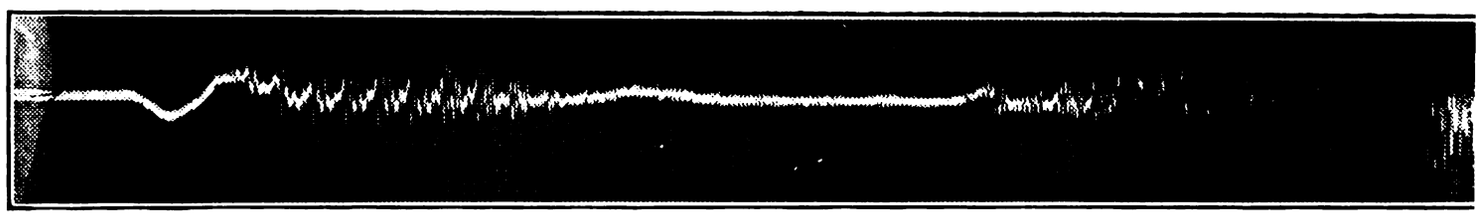

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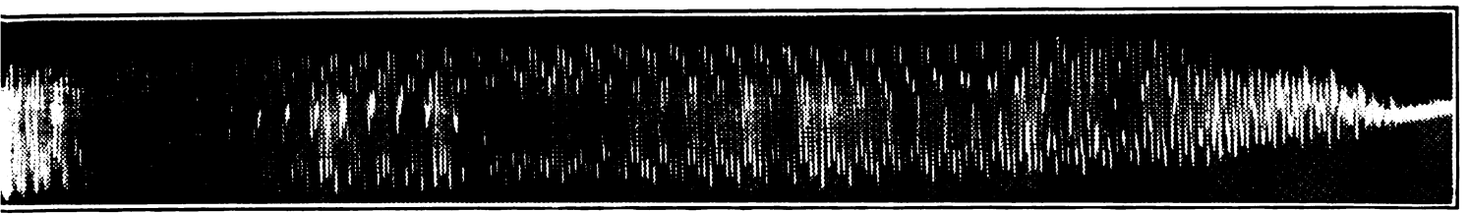
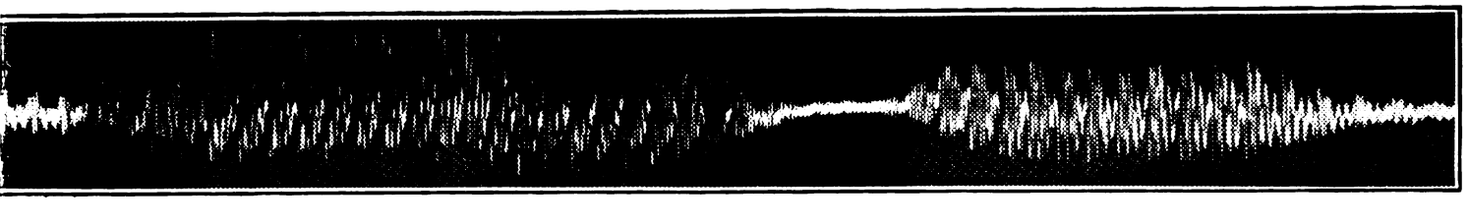


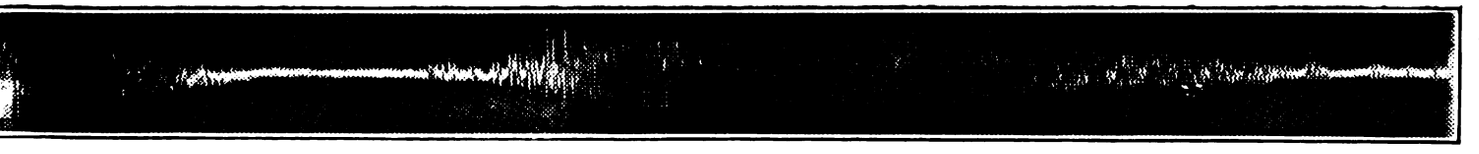
VORD "NEW YORK" IS SPOKEN INTO THE TELEPHONE

D "SAN FRANCISCO" IS SPOKEN INTO THE TELEPHONE



VORD "ATLANTIC" IS SPOKEN INTO THE TELEPHONE

ORD "PACIFIC" IS SPOKEN INTO THE TELEPHONE



RD "AMERICA" IS SPOKEN INTO THE TELEPHONE

AL CURRENT WHICH TAKE PLACE IN A TELEPHONE CIRCUIT WHILE THE WORD
ABOUT FIVE FEET OF SUCH A PICTURE REPRESENTS THE CURRENT CHANGES
ONE SECOND.

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phone Pioneers of America on "The Birth and Babyhood of the Telephone." This reminiscent account of the early days of the telephone by the man who had so active a part in its invention has since been put into pamphlet form and is considered one of the most valuable contributions to the history of telephony.

Mr. Watson is now living at East Braintree, Mass. He is a member of the American Association for the Advancement of Science, the Boston Society of Natural History, and the Massachusetts Horticultural Society.

THEODORE NEWTON VAIL

Theodore Newton Vail, president of the American Telephone & Telegraph Company, is a lineal descendant of John Vail, the Quaker preacher who settled in New Jersey in 1710. He was born in Carroll County, Ohio, July 16, 1845, and is the son of Davis and Phœbe (Quinby) Vail.

His grandfather, Lewis Vail, a civil engineer, went to Ohio in the early days and became prominent in that State as a builder of canals and highways. Stephen Vail, an uncle of Theodore Newton Vail, founded the Speedwell Iron Works near Morristown, N. J., where was built the machinery for the first steamship which crossed the Atlantic ocean. At these works Samuel F. B. Morse perfected and first operated the magnetic telegraph. Stephen Vail and his sons supplied Morse with money and Alfred Vail built the first telegraph instruments and also invented the dot and dash alphabet, known as the Morse code.

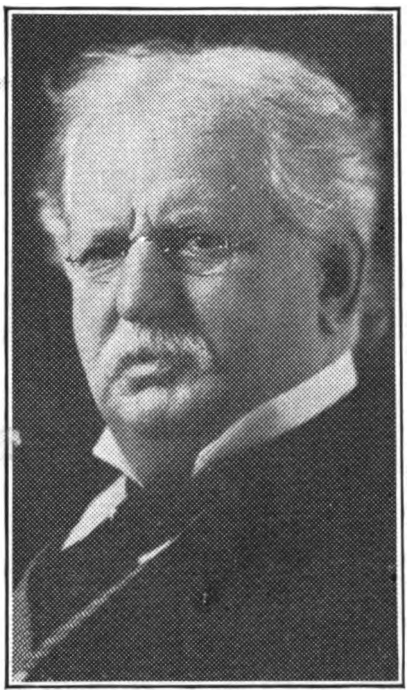
Davis Vail, father of Theodore Newton Vail, was born in Ohio, but at an early age went to New Jersey and became connected with the Speedwell Iron Works. He married there and afterwards went back to Ohio for a few years, during which time his son Theodore was born. When the boy was about four years old the family returned to New Jersey where they stayed until 1866, later moving to Iowa where his father became a farmer on a large scale.

On his mother's side Mr. Vail is connected with the prominent Quinby family of Morris County, New Jersey, his mother being a daughter of Judge Isaac Quinby and a sister of General Quinby, distinguished as a mathematician and a general of the Civil war.

Theodore Newton Vail received a thorough education in the old academy at Morristown, New Jersey, and after leaving school read medicine for two years with his uncle, Dr. William Quinby. During that time he acquired a working knowledge of telegraphy in a local office and when the family migrated to Iowa he went with them. Ambitious to strike out for himself, in about a year he got a position with the Union Pacific Railroad and became an agent and telegraph operator at a small station on that line. In 1869, through the friendship of General Grenville M. Dodge, Chief Engineer of the Union Pacific, he was appointed clerk in the railway mail service where his ability to systematize and organize was soon felt. At that time the railway mail service was in a very crude state and Mr. Vail prepared special studies on the question of distribution and dispatching of the mail which brought him quick recognition from the authorities at Washington and he was summoned to the capital and appointed Assistant Superintendent of the railway mail service under George I. Bangs. Thereafter he took a leading part in the development of the fast railway mail service.

In 1876 he was appointed General Superintendent, although at that time he was the youngest of the officers in the railway mail service. Following in the footsteps of his predecessor, he strengthened the Civil Service system and developed the railway mail service of the country into a state of efficiency.

In 1878 he was approached by Gardiner G. Hubbard, father-in-law of Alexander Graham Bell, and offered the position of General Manager of the American Bell Company, a company formed to exploit the telephone, a recent invention. Mr. Hubbard had become acquainted with the executive ability of Mr. Vail and had decided that he was just the man to take hold of the new invention and to organize and develop



Theo. N. Vail

the telephone business on the large scale which its promoters saw would be necessary when the world had become educated to the possibilities of the service.

Realizing that he had reached the limit of advancement in the railway mail service and having become intensely interested in the telephone itself, with a firm faith in its future, Mr. Vail accepted the position and immediately set himself to the task before him. He found many obstacles in the way, all of which were overcome. It was at first believed that the telephone was only good for local service, but Mr. Vail, with a larger conception of its utility, had visions of long-distance telephony far in advance of any one else, and one of his first achievements was to establish a long-distance line between Providence and Boston, and upon his initiative, improvements were made in telephone equipment and material so that little by little the obstacles were overcome and long-distance telephony extended until to-day New York talks to San Francisco.

In 1885 Mr. Vail resigned as General Manager of the American Bell Telephone Company and was elected first president of the American Telephone & Telegraph Company, resigning in 1887. In 1890 he resigned from the presidency of the Metropolitan Telephone & Telegraph Company of New York.

After retiring from active telephone work he purchased a large farm in Vermont, which he called the Speedwell Farms, and settled down to the raising of French coach horses, Welsh ponies, Jersey cattle, and Shropshire and Dorset horned sheep.

He spent some years abroad and in 1893 made a trip to South America where he became much interested in the Argentine Republic and obtaining a government concession near Cordoba, he built an electric power station. He also bought a horse-car line in Buenos Ayres, converted it into a trolley line, organized a company and equipped it with the best cars from the United States, bought out all competing lines, and gave the city a complete service. A company was organized, composed of British capitalists who operated the road, and for some time Mr. Vail had his headquarters in London; but finally, believing that the undertaking no longer needed his personal attention, he retired from the company activities in 1904 and returned to his farm at Lyndon, Vermont.

In 1907, urged by prominent officials of the Bell Telephone Company, he reentered the telephone field and again took the presidency of the American Telephone & Telegraph Company.

In 1910, the American Telephone & Telegraph Company having acquired a controlling stock interest in the Western Union Telegraph Company, Mr. Vail became its president and proceeded to reorganize the company along the lines which he had so successfully applied to the telephone business, greatly increasing its gross revenue, rehabilitating its equipment, and giving to the public new and improved service.

On April 15, 1914, the American Telephone & Telegraph Company having disposed of its interests in the Western Union by agreement with the Government, Mr. Vail resigned the presidency of the Company and retired from the board of directors.

Besides being president of the American Telephone & Telegraph Company, Mr. Vail is director in many of its subsidiaries and also of the Bell Telephone Company of Canada.

He is a director of the Astor Trust Company of New York, a trustee of the American Surety Company of New York; president and a director of the New England Casualty Company; president and a director of the Lyndonville National Bank and of the Lyndonville Creamery Association, and many other corporations.

Besides his business activities, Mr. Vail has founded the Lyndon Agricultural School at Lyndon, Vt., in which he takes a keen interest. He is also a trustee of the Boston Museum of Fine Arts and a director of the Boston Opera House.

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UNION N. BETHELL

Union Noble Bethell, President of the New York Telephone Company, was born in Newburgh, Indiana, on September 12, 1859. He was graduated from Hanover College in 1879 and later received the degree of A.M. from that institution.

In a recent interview Mr. Bethell said: "Find out what you are fitted for, then go at it with all the energy in your nature. It took me ten years to find out what I really wanted to do, but since then there hasn't been any trouble. Have more irons in the fire than one, but be sure which is your favorite and stick to it with the greatest determination."

While he was heating irons and finding out just what he most wanted to do, Mr. Bethell was acting as Deputy Auditor of Warrick County, Indiana, and studying law at night. He entered the government service in 1881 and received his legal degree in 1885. He was admitted to practice in the District of Columbia and in Indiana and later in the Supreme Court of the United States.

As a special agent of the government he spent two or three years in the West and there he became interested in the telephone which was then in the early stages of development. He decided that he had found what he was looking for.

He came East and in 1889 began his telephone career with the New York & New Jersey Telephone Company in Brooklyn. In a short time he was elected Secretary and Treasurer of that company and in 1893 he was made General Manager of the New York Telephone Company.

The telephone had grown to a mechanical adequacy with which its organization had not kept pace and it was in the fields of organization that Mr. Bethell's genius found its outlet. He discovered that there was very little co-operation between the mass of telephone workers whose functions frequently overlapped and his first series of "General Instructions" aimed to remedy this defect. He planned definite work for those under him and inspired his subordinates with the all-important idea of team-work. Then when he had whipped his organization into shape he went out after business. There

U. N. Bethell

were less than 10,000 telephones in New York in 1893 and the rates were high. Mr. Bethell soon disabused the minds of both the public and his employees of the idea that the telephone was a luxury for the wealthy. He democratized the telephone in New York. Under his direction the number of pay-stations was doubled and the rates steadily cut. Small users were welcomed. There were more than twenty-one thousand telephones in the Greater City by 1897. There were 190,000 in 1905, and in 1908 there were 310,000. During 1906, sixty-five thousand telephones were put in.

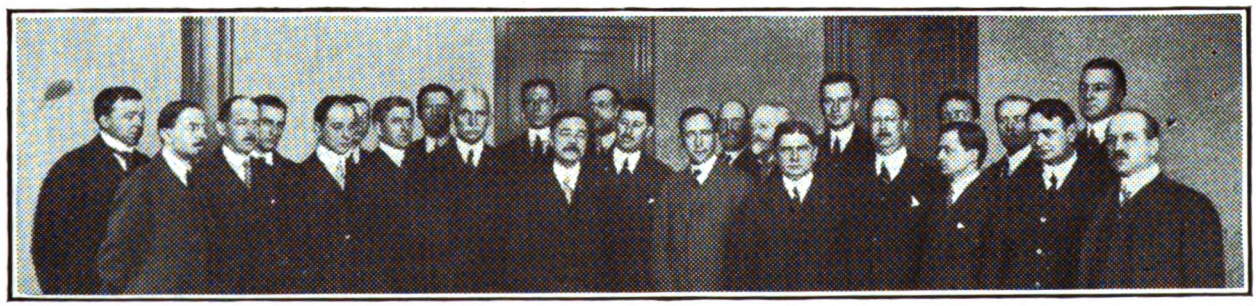
In the meantime, Mr. Bethell's responsibilities were steadily growing. In 1901 he was made President of the Bell Company operating in Washington, Baltimore, and surrounding territory and later he became President of the company operating in Philadelphia and Eastern Pennsylvania. By successive steps he assumed the management of the Bell companies operating throughout New York State, New Jersey, Pennsylvania, Delaware, and Maryland.

In 1909, with Mr. Bethell at their head, these companies were formed into an operating unit covering a territory of about 125,000 square miles, from Washington on the South to Pittsburgh on the West, New York on the East, and the Canadian border on the North.

In 1910 Mr. Bethell was made Vice-President of the American Telephone & Telegraph Company and is now Senior Vice-President of that company as well as President of the New York Telephone Company which operates 1,033,490 telephones.

Mr. Bethell has made exhaustive studies of the telephone abroad and is generally acknowledged to be one of the world's authorities on all that pertains to questions of telephone policy and finance and details of telephone management. In 1909 Mr. Bethell received the Order of the Rising Sun from the Emperor of Japan for his services to science.

Mr. Bethell was married in 1893 to Miss Donna I. Brink and has three sons. He lives at Upper Montclair, N. J.



E. H. Colpitts
C. H. Arnold
S. H. Browne
C. A. Robinson
F. B. Jewett
F. B. Driscoll
K. W. Waterson
L. F. Morehouse
E. F. Sherwood
B. Gherardi
J. J. Carty
G. K. Thompson
G. A. Campbell
R. F. Estabrook
W. L. Richards
J. A. Barrett
C. E. Scribner
O. B. Blackwell
F. L. Rhodes
T. Shaw—Top
H. S. Osborne—Lower
J. L. McQuarrie
H. S. Warren
W. E. Farnham
F. P. Valentine

SOME OF THE ENGINEERS WHO HAVE MADE THE TRANSCONTINENTAL LINE POSSIBLE

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JOHN J. CARTY

One of the most important figures in the development of the art of telephony is John J. Carty, Chief Engineer of the American Telephone & Telegraph Company.

No other man in the world has so complete a knowledge of the telephone business as he possesses.

Mr. Carty was born in Cambridge, Mass., in 1861. He early became associated with the pioneers of the Bell system. During his continuous employment with the company, no man has contributed more toward the development of that great system.

For more than thirty years he has worked continuously for the development of the business and has contributed many inventions which have made possible the superior service which Americans enjoy.

He designed and installed the first multiple switchboard. The metallic circuit, without which long-distance telephoning would be impossible, was his discovery. The "bridging bell" which makes the party line possible was another of Mr. Carty's contributions. Under his direction all the large switchboards in New York City were constructed.

J. J. Carty

As Chief Engineer of the American Telephone & Telegraph Company he has standardized the methods of operation and construction.

The high character of his services in the advance of science has been fittingly recognized. The Franklin Institute of Pennsylvania conferred upon him the Edward Longstreth medal of merit, and he has been decorated by the Emperor of Japan with the Order of the Rising Sun, also with the Order of the Sacred Treasure.

He has taken an active interest in the advancement of engineering education in its higher branches, and is a member of the Society for the Promotion of Engineering Education. He is also a member of the Society for the Promotion of Industrial Education.

He has served as Vice-President of the American Institute of Electrical Engineers, and is past president of the New York Electrical Society; member of the Franklin Institute of Pennsylvania; member of the Society of Arts; honorary member of the American Electro-Therapeutic Association; the Telephone Society of Pennsylvania, the Telephone Society of New England, the Telephone Society of New York, and the Telephone Pioneers of America.

Order of the Sacred Treasure *Order of the Rising Sun*

Decorations Conferred Upon J. J. Carty, Chief Engineer, American Telephone & Telegraph Co., by the Emperor of Japan

BANCROFT GHERARDI

Bancroft Gherardi, Engineer of Plant of the American Telephone & Telegraph Company, was born in San Francisco, California, April 6, 1873. He was graduated from the Polytechnic Institute of Brooklyn in 1891 with the degree of B.S., after which he went to Cornell, where he received the degree of M.E. in 1893 and M.M.E. in 1894.

In February, 1895, he began his telephone engineering work in the office of Mr. J. J. Carty, then Engineer of the Metropolitan Telephone and Telegraph Company, the predecessor of the New York Telephone Company. His earliest work was the inspection and testing of cables, so at the very start he became familiar with the state of the art in regard to this important part of the telephone plant. After doing this and other general work for some time, he was placed by Mr. Carty in charge of the material inspection work of the company. Later, when it became necessary to prepare a new fundamental plan for New York, this work was placed under his charge, and he directed the preparation of a fundamental plan for 100,000 lines within the area of Manhattan and The Bronx. This figure of 100,000 lines then seemed so large that some doubted whether the plan was one resting on any but a fantastic foundation. This was in 1898. However, in 1907, only nine years later, these 100,000 lines were attained, and before that time much larger plans were prepared and are now outgrown.

In the fall of 1900 Mr. Gherardi was transferred to the Traffic Department of the New York Telephone Company. He there reported to Mr. E. F. Sherwood, Superintendent of Traffic, and under his direction and that of Mr. Carty, created the first Traffic Engineering Department of any operating company; a department now recognized as such an important part of the administration of a successful telephone company.

On January 1, 1901, Mr. Gherardi was appointed Chief Engineer of the New

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York & New Jersey Telephone Company, then operating as a separate company, although intimately associated with the New York Telephone Company because of its proximity, similarity of conditions, and large interchange of business. His close connection, both professional and personal, with Mr. Carty, the Chief Engineer of the New York Telephone Company, and with the other officials of that company, enabled him to bring the engineering of the New York & New Jersey Telephone Company into the closest and most harmonious relations with that of the New York Company.

The first important work which confronted him was the preparation of fundamental plans for Brooklyn and other large cities in the company's territory, and immediately following these, and based thereon, was the conversion of the plant to a common battery basis. Soon after his appointment to the New York & New Jersey Company, loading was invented, and it was decided to place a loaded cable between New York and Newark. This cable was the first commercial application of cable-loading to a working telephone plant, and in connection therewith many questions came up requiring solution. This cable was successful and was immediately followed by a very rapid extension of loading throughout the territory.

In March, 1906, the operating organizations of the New York Company and the New York & New Jersey Company were consolidated, and at that time Mr. Gherardi became Assistant Chief Engineer of both companies, reporting once more to his old chief, Mr. Carty.

In May, 1907, when Mr. Vail became President of the American Telephone & Telegraph Company, he appointed Mr. Carty to the position of Chief Engineer of that company, and in connection with the reorganization of the engineering forces, Mr. Gherardi was appointed Equipment Engineer of the American Telephone & Telegraph Company, and in 1909 was appointed Plant Engineer of that company, in charge of all plant development and standardizing for the Bell System.

He has had his part in connection with the subway and cable from Boston to Washington, the lines from New York to Denver, and later the transcontinental line, to say nothing of a multitude of problems in regard to switchboards, subways, cables, open wire lines, substation instruments, transmitters, receivers, crosstalk, inductive interference, and every other question pertaining to the largest telephone plant in the world.

Mr. Gherardi was particularly fortunate in working at the start and throughout his whole career under the direction of and in close association with Mr. Carty, who is universally recognized as

Bancroft Gherardi

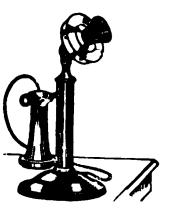
the leading telephone engineer of the world. No one knows better than Mr. Gherardi that it is both a scientific and liberal education to work for Mr. Carty.

For many years he has been connected with the American Institute of Electrical Engineers, and has taken a prominent part in its affairs. In addition to presenting a number of papers and taking part in discussions, he held the position of Manager of the Institute for three years and for two years was one of its Vice-Presidents. Last year he was again elected to the Board of Directors as a Manager, a position which he now holds. In the Telephone Society of New York he has occupied many positions, including that of President, and has presented a number of papers.

In June, 1898, Mr. Gherardi married Miss Mary Hornblower Butler. Mr. and Mrs. Gherardi reside at Bayhead, N. J., but spend their winters in New York City.

The name Gherardi appears in the histories of two most important steps in the development of electrical communication. Some fifty years before Bancroft Gherardi, Plant Engineer of the American Telephone & Telegraph Company, had an active part in the completion of the first transcontinental telephone line, his father was prominent in the laying of the first Atlantic cable.

The first attempt to lay a cable under the Atlantic was in 1857. The wire which was played out from the stern of the laying ship broke and 500 miles of it were lost. In July of the following year a second expedition was sent out. On July 28, in mid-ocean, the naval ships *Niagara* and *Agamemnon*, each carrying half the cable wire, spliced the ends and started off in opposite directions. Lieut. Gherardi, Engineer Gherardi's father, who was later to become Rear-Admiral, was senior watch-officer aboard the *Niagara*. The *Niagara* headed west for the spot chosen as the terminus at Trinity Bay, Newfoundland. She arrived there on August 5th and Lieut. Gherardi was sent off in charge of the small boat that landed the cable. For his share in this historic achievement Lieut. Gherardi was awarded the medal shown in the cut. That medal is one of the most treasured possessions of the head of the Plant Engineering of the Bell System. It is a notable coincidence that the younger Gherardi is now doing his part in connection with another epoch-making event—the spanning of the continent with a telephone line by far the longest in the world, and connecting San Francisco, his birthplace, on the Pacific Coast, with New York, his present home, on the Atlantic Seaboard.



Gold Medal Presented to Lieut. Gherardi, Father of Bancroft Gherardi of the A. T. & T. Co., in Commemoration of Services Rendered in the Laying of the First Trans-Atlantic Cable

A Dream that Came True

Some dreams do come true. Alexander Graham Bell was called an "impostor," a "ventriloquist," and "a crank who says he can talk through a wire," when he invented the telephone which English newspapers called "the latest American humbug." And yet Bell was one of the advance guard of civilization and progress, for with the prophetic vision of a dreamer he wrote in 1878: "It is possible to connect every man's house, office or factory with a central station, so as to give him direct communication with his neighbors. . . . It is conceivable that cables of telephone wires could be laid underground, or suspended overhead, connecting by branch wires with private dwellings, shops, etc., and uniting them through the main cable with a central office."

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C. E. SCRIBNER

Charles Ezra Scribner, Chief Engineer of the Western Electric Company, the manufacturing organization of the Bell System, is the third man in the electrical field in the United States in the number of electrical patents issued. Mr. Scribner has taken out between 400 and 500 United States patents and has between 600 and 700 applications on file. His principal inventions have been telephone apparatus, although when he first turned his attention to things electrical he patented numerous electrical devices such as dynamos and arc lights.

He has made many important contributions to the art of telephony, particularly in the development of switchboard, the "nerve center" of the telephone system. All other telephone apparatus also shows the imprint of his work.

Mr. Scribner was born at Mt. Vernon, Ohio, February 16, 1858, the son of Charles Harvey and Mary Elizabeth (Morehouse) Scribner. He was educated in the schools of Toledo, Ohio. He was only 18 when he went to the Chicago factory of the Western Electric Manufacturing Company to show a model of a telegraph repeater he had made. There he met Enos M. Barton, the head of the organization, and through the latter's influence became an inspector of printing telegraph apparatus in a local telegraph company. Shortly afterward he entered the laboratory of the Western Electric Manufacturing Company and from that moment he began a career as an investigator and inventor that has brought him international fame, and Mr. Scribner, still a young man, has seen the results of his research and development work bear splendid fruit in the present telephone system of the country.

C. E. Scribner

The Western Electric Manufacturing Company dropped the word "Manufacturing" from its name in 1882. Mr. Scribner remained at the Chicago factory until 1908, when he became connected with the New York office as Chief Engineer in charge of development and experimental work.

Mr. Scribner is a Fellow of the American Institute of Electrical Engineers and in 1913 was a director and vice-president of the organization. He is a trustee of the United Engineering Society. His work in the electrical field was recognized at the Paris Exposition of 1900 by the award of a gold medal.

Mr. Scribner's clubs include the Machinery Club and the Engineers' Club of New York; the Ethan Allen Club and the Waubanakee Golf Club, both of Burlington, Vermont.

On December 1, 1880, he married Miss Marietta Margaret Brown of Toledo, Ohio. His home is at 258 Riverside Drive, New York.

FRANK B. JEWETT

Dr. Frank B. Jewett, Assistant Chief Engineer of the Western Electric Company, has had a large share in solving the problems of transmission that have been created as telephony has been developed to the extent where transcontinental telephone talk could be made possible. For nearly eight years he was in the Engineering Department of the American Telephone & Telegraph Company, and in that period had charge of all transmission development work for the Bell System.

While Dr. Jewett was Transmission Engineer for the American Telephone & Telegraph Company the loading of eight-gauge circuits was perfected; phantom cables and phantom loading for open wires and cables were developed; the New York to Denver circuit and line was engineered and also the Boston to Washington underground cable. Dr. Jewett began work on the transcontinental line, retaining general charge of the transmission engineering until the line was completed.

Frank B. Jewett was born in Pasadena, California, September 5, 1879. He graduated from Throop Polytechnical Institute of Pasadena in 1898 with the degree of A.B. in electrical engineering. From 1898 until June, 1902, he was a student in the University of Chicago, receiving the degree of Ph.D. in 1902. From 1901 until June, 1902, he was research assistant to Professor Michelson of the Department of the Physics. From 1902 to 1904 Dr. Jewett was instructor in physics and electrical engineering at the Massachusetts Institute of Technology.

Frank B. Jewett

Dr. Jewett became connected with the American Telephone & Telegraph Company in September, 1904, remaining until April, 1912, when he became Assistant Chief Engineer of the Western Electric Company, having charge of all development and research work.

Dr. Jewett is a Fellow of the American Institute of Electrical Engineers and is Chairman of the Telephone and Telegraph Section of the Standards Committee of the Institute. He also is a member of the Society for the Advancement of Engineering Education and President of The Telephone Society of New York. His clubs include the Machinery, Engineers and Technology Clubs of New York and the University Club of Chicago. He is a member of Delta Upsilon fraternity.

Dr. Jewett has written numerous papers on various scientific subjects for the *Philosophic Magazine* and the *Physical Review*, and he has presented papers before the American Institute of Electrical Engineers.

In 1911 he presented a paper on "Long Distance Telephony in America" before the International Electrical Congress at Turin, Italy.

On December 28, 1905, he married Miss Fannie C. Frisbie of Rockland, Ill.

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Mr. Theodore N. Vail
on behalf of the
American Telephone and Telegraph Company
and its Associated Companies
requests the honor of the presence of
Dr. Alexander Graham Bell
at the celebration of the completion
of the Transcontinental Telephone Line
at four o'clock on Monday afternoon
the twenty fifth of January
One thousand nine hundred and fifteen
The Telephone Building
15 Dey Street, New York

Fac-Simile of the Invitation Issued to Inventor of the Telephone to be Present at the Celebration

SOME INTERESTING FACTS

The New York-San Francisco line is 3,390 miles long.

There are two circuits, each using 6,780 miles of hard-drawn copper wire.

There are 870 pounds of copper wire in each circuit mile, and 2,960 tons in the entire line.

By transposing the two physical circuits, there is created an additional circuit known as a "phantom circuit."

If a voice were loud enough to be heard from New York to San Francisco, it would take four hours to travel that distance through the air.

The voice by telephone travels from New York to San Francisco in 1-15th of a second, travelling at the rate of 56,000 miles per second.

The voice of a man speaking in New York is heard in San Francisco three hours earlier, that being the difference in the standard time of the two cities.

The first sound was transmitted by telephone June 2, 1875, in Boston.

The first words were transmitted by telephone March 10, 1876, in Boston, Mr. Watson heard Prof. Bell say, "Mr. Watson, please come here, I want you."

The first conversation held by telephone took place October 9, 1876, over a telegraph line two miles long between Boston and Cambridge. Mr. Bell and Mr. Watson talked.

The first newspaper report ever transmitted by telephone was sent from Salem, Mass., to the Boston *Globe*.

The New York-San Francisco line crosses thirteen states.

The energy freed by cooling one spoonful of water one degree, would operate a telephone for ten thousand years. This baby current of electricity must take a voice 3,400 miles, and it cannot be increased, or its power to transmit speech is gone.

One hundred thirty thousand poles are required to carry the line across the continent.

Four hard-drawn copper wires, .165 inch in diameter, carry the current from ocean to ocean.

In the loading coils for each physical circuit there are 13,600 miles of fine insulated wire 4-1,000 of an inch in diameter.

The Panama Canal was begun nine years ago and has cost $310,000,000; within the same space of time the Bell Company has spent twice that amount in its engineering construction work alone.

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Annihilating Space

Five Months One Way Reduced to One Second Round Trip, New York to San Francisco

A Prairie Schooner, 1849—New York to San Francisco in Five Months

1849

Hot, radiant, yellow sand, stretching out interminably toward purple mountains. Air, hot as the sands, stifling, muddy with powdery dust. Set squarely in the midst of this vast and lonely wilderness, a drab, cloth-covered prairie schooner crawling, like some immense insect, toward the Land of Gold.

* * *

Five months of longing, hoping, monotonous turning of dry and crusted wheels. The tired little mother with babe in arms pulled back the canvas flaps and looked out. Far, far ahead at the end of the wide trail of sand and bleached bones, lay the great West, as in a mystic dream. Five months—and when the hills, their running streams and low-hanging wet clouds at last came into view, the journey did not seem so long, after all . . . . . only five months from New York to 'Frisco.

Rounding the Horn, 1859—New York to San Francisco in Three Months

1859

Stinging, salt spray blew in the faces of the more sturdy who crowded far forward in the gray of dawn. "Roundin' th' Horn" a deep voice boomed aft from the drifts of mist and fog, and as if to challenge these venturesome ones who had found a shorter route to the Gold Coast, the snarling sea cracked over the creaking decks and the whole, little universe of spars and sails and brave masts —and men, ran salty with the sea. Treachery of wind and wave and rocky coast marked these storm-bound miles, but it was worth the dare. "Three months to 'Frisco's opal bay" and the quiet of a prosperous harbor. Whoever heard of such time before? Indeed, man was moving apace. And clipper ships in plenty swung around the Horn, fair weather and foul, vying with each other to shorten this latest travel record.

1869

The musty records of railroading and human progress make almost sacred reference to the first Union Pacific engine that worked its panting, fretful, cindery way over mile upon mile of yellow lands, until it drew its thread of cars up into the mystery of the western hills.

* * *

It was on the lips of everyone in those days—you heard it in Old New York within stone's throw of affable taverns and Bowling Green—you heard it as far across the continent as the Catalinas—"'Frisco in twenty days!" they were saying. The sheer wonder of it! Who could ever have dreamed of such a thing? Man was out-stripping himself in his new, seven-league-boots of steel. And all the while the first, brave little Union Pacific engine was whittling fame for itself out of the grim majesty of the Rockies.

1914

We are proud of our Great Achievement; our hands reached out to pat the backs of those mud-spattered men in yellow khaki when they closed the doors of the innumerable little rain-soaked shanties of the tropics upon their blueprints and fever and hopes and disappointments, and called to us that our Panama Canal was ready. Another vista opened up with the rising of another sun—"Sixteen Days to 'Frisco, via the Canal." And a nation—a score of nations stopped their labors for a moment and looked on with respect as Old Glory went rippling up to the top of a gleaming mast and the first steamship eased its way into the chocolate waters of Culebra Cut.

* * *

"Sixteen days from New York to San Francisco." It seemed incredible, and across the broad waters they whispered

Across the Continent by Rail, 1869—New York to San Francisco in Twenty Days

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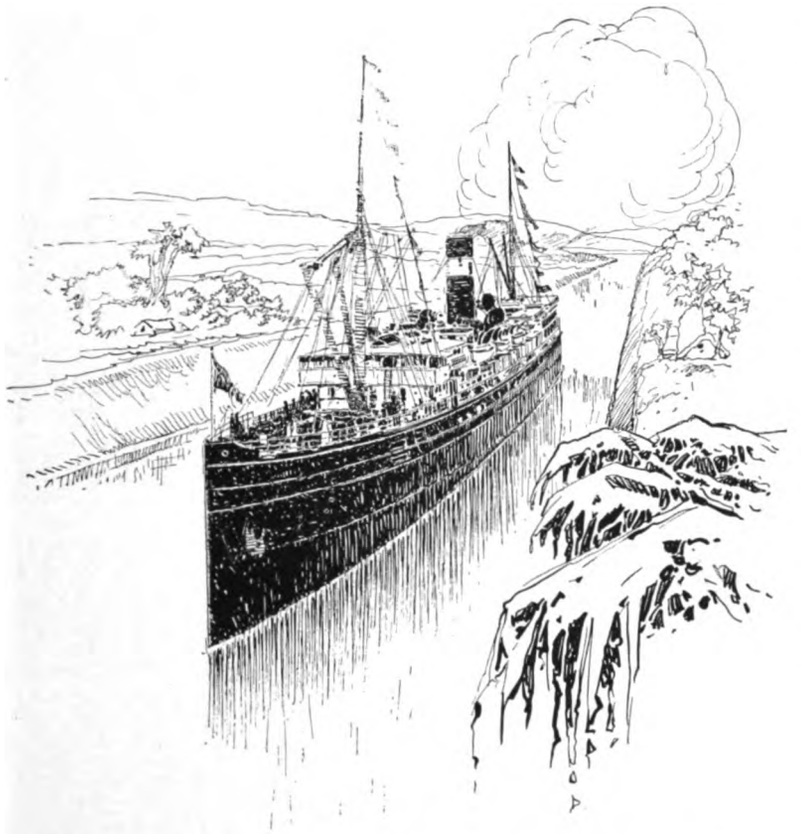


Via the Panama Canal, 1914—New York to San Francisco in Sixteen Days

to each other of wonderful Yankee speed. The shiny, green festoons of foliage, mast high along the Cut and the queer little thatched houses peered down from the conquered heights of Gatun as the steamer cut a continent in two.

1915

It was on the observation platform of the Overland Limited, bound from New York to 'Frisco. Two men smoked their cigars in silence for some time. Suddenly one of the two spoke: "By Jove, they're getting things down pretty fine when you can get across in four days. Doesn't seem like any distance. Why, it was only yesterday, it seems to me, that they were glad to make it in five months in a prairie schooner, without mishap."

"Yes," the other remarked reflectively, "pretty fast and progressive age—but they've reached their limit. These four days of rail and buffet cars and sleepy porters still separate a business man from lots of opportunity."

1915

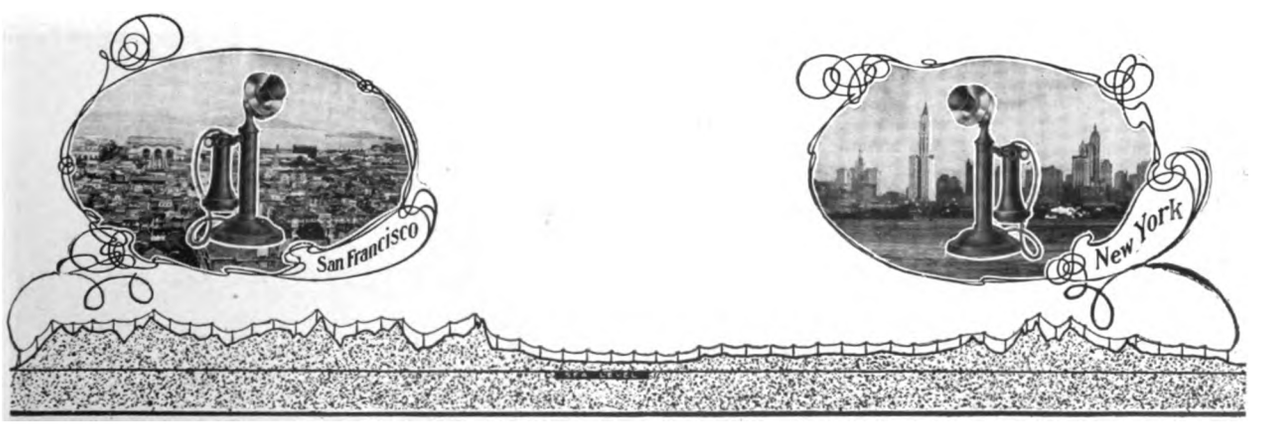
The business man's lament is answered. From New York to San Francisco is now a telephone trip of less than a second. You will soon be able to "call up" the western city from your New York office. "Here's your party," the very pleasant voice of "Long Distance" will say as she opens up for you a pathway of wires straight across the continent—over the mountains and plains, through large cities and modest hamlets—past snow and rain and tropical sunshine. Every wire on this speediest of all speedways tingles with Opportunity.

* * *

And the absolutely incongruous part of it is, that your voice will arrive in 'Frisco just three hours before you call up, according to the local time out there on the coast.

This is in reality "The Triumph of Science."

Overland Limited, 1915—New York to San Francisco in Four Days



The Transcontinental Voice Highway—New York to San Francisco in "Less than a Second"

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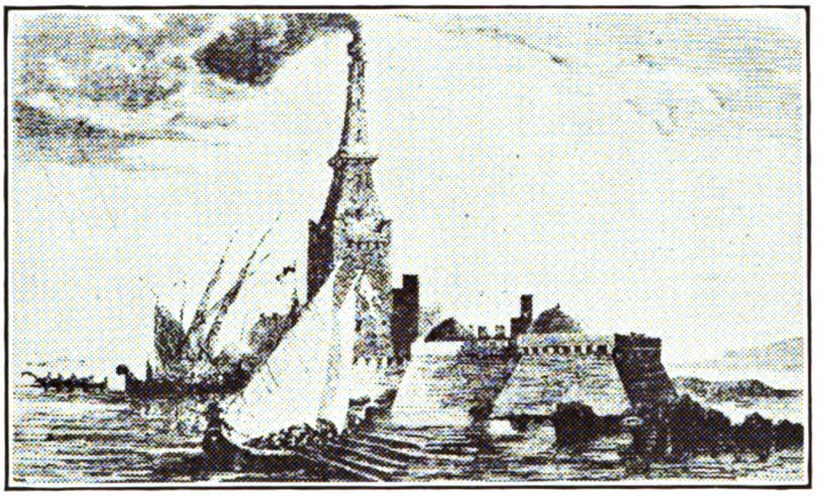
The Power of Personality in Communication

Realized in the Transmission of Speech by Telephone

Historical Review of the Development of Communication, from Ancient to Modern Times

"Speech is one of our grand distinctions from the brute," wrote Channing, which only expressed in different words what Quintilian wrote centuries ago: "God . . . has impressed man with no character so proper to distinguish him from other animals, as by the faculty of speech."



The Pharos of Alexandria, One of the Seven Wonders of the World, 3d Century B. C.

It might truly be said also that nothing distinguishes one man from another more than his speech.

Speech, therefore, may be termed the evidence of man's superiority in creation and of a man's superiority among men.

The purpose of speech is the communication of ideas. A witty Frenchman has said, "Speech was given to man to disguise his thoughts," but even if this be true there is an idea behind the disguise. Speech has determined the course of the world's history. Before "Adam dolve and Eve span," the whisperings of the serpent and the seductive pleadings of the woman caused humanity to labor for existence. It may not be irreverent to conjecture whether the course of the world would have been so ordered if these fatal communications had not been made by word of mouth—for example, if a messenger, a letter, a telegram, or even a wireless had been sent! At the Tower of Babel, the first gigantic engineering enterprise on record was abandoned uncompleted because, although speech was possible, the understanding was absent through the confusion of tongues, and the dispersion of the nation followed.

The communication of ideas by means of speech, therefore, has been dependent in all ages, first, upon the proximity of the speakers to their hearers, and, secondly, upon the use of a common language.

All ties of kinship and affection were broken with the severance of communication when people of the same race and language first went out to populate new parts of the earth, and there is a record of toilsome effort from the dawn of history until this day, to devise a means of communication which would be effective. All these efforts were directed towards supplying a symbol for the thing signified, providing a secondary instead of primary means of communication, a substitute for direct intercourse which distance made impossible.

Not until the success of Alexander Graham Bell's invention was the intermediary eliminated, and the human voice conveyed to the listening ear, with all its tones and modulations.

"Without knowing *the force* of words it is impossible to know men," wrote Confucius, and the force of words is in their utterance.

Charles James Fox, the famous English statesman and parliamentarian, was congratulated by a friend one day on a speech delivered the night before and printed in the *Times* that morning. Fox replied that if it read well it must have been a very poor speech.

Everyone is hearing of the wonderful power of Billy Sunday in his revivals, but if you read one of his sermons, you will wonder why the thousands who constitute his audiences night after night are worked up to the highest pitch of enthusiasm.

The power of words, then, is in their utterance, which means that they are powerless or powerful according to the personality behind them. The telephone alone of all means of communication conveys the words and the personality behind them. It gives our words and personality wings and they fly where we would have them go.

But this achievement has not been wrought in a day, and only against its background can it be fully appreciated.

The history of communication is the history of human progress. Hand in hand with the gradual development of intercourse, there has been growth in fulness of life. The fundamentally social nature of man has made this growth inevitable. Only through communication could the experience of one influence the action of another, and only through the interchange of the lessons of experience could the well-being of the race advance.

Communication is of two sorts—distant and near. Language early met the demands of the latter, but the development of long-distance communication has been slow.

In ancient Egyptian wall paintings may be seen pictured the earliest method of distant communication—the messenger. Bearing the message on a roll of papyrus, the ambassador comes with great ceremony from the Queen of Kush to the Prince of Upper Egypt. The variations of communication by messenger were many. Runners were employed, and messengers on horseback were sent to outstrip them, if the opposing side was on the alert.

The beacon lights which told Greece the news of the fall of Troy; the shafts of the sun reflected from polished shields, seen after Marathon; the Pharos, one of the seven wonders of the world, a kind of lighthouse which sent "a light by night" and also "a cloud by day"—all these early methods of distant communication were limited in scope, often being misinterpreted. Attempts were made to transmit exact information by means of combinations of torches corresponding to letters, but these never reached any degree of perfection.

With the downfall of Rome and the influx of barbarians came the Dark Ages, when communication was extremely limited and the progress of civilization seemed at a standstill, but was in reality only storing up new vigor. The Bayeux tapestry, woven about 1100 A.D., shows William the Conqueror receiving news from a herald, and again, William setting fire to a hut as a signal to his troops that war is to begin; still the ancient methods of communication—the messenger and fiery signals. These, however, were supplemented in the Middle Ages by the use of carrier pigeons. The Crusaders learned the value of pigeons as messengers, from the Mohammedans, and after the Crusades pigeons were widely used in Europe.

Another slight step in advance was made in 1464 when a restricted postal system was developed by Louis XI. In many cases the letter carriers used stilts to increase their speed.

Abb. 10. Abſenden v Brieftauben Holzſchn a Montevilla, Neiſe 1488.

Woodcut Showing the Use of Carrier Pigeons—Date 1488

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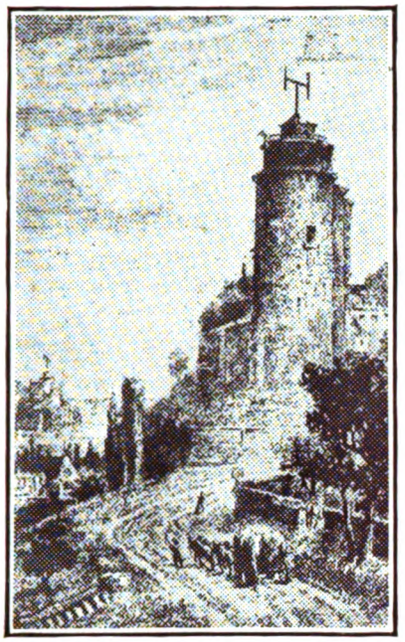


Two Chappe Signal Towers—1791

By the middle of the fifteenth century, when Europe was lifting her head from her long nap, the invention of movable types came to hasten her awakening. The art of printing, that great stimulus of the Renaissance, has grown steadily in influence and power as a means of distant communication, until to-day it bears its tidings everywhere, slowly, indeed, but in unlimited scope.

With the new interest in science which was a part of the Renaissance, Galileo's invention of the telescope opened the way for further development in transmitting messages by optical signals. Amatons, a French physician, attempted a system of signaling by flags and cross bars on poles, the telescope being used in deciphering it. This was a forerunner of the flag and arm signal still in use. Another French inventor, Gauthey, tried to utilize the property of metals to transmit sound, by developing a system of metallic tubes. This was not successful at the time, but was the precursor of that fascinator of late-Victorian childhood, the speaking-tube.

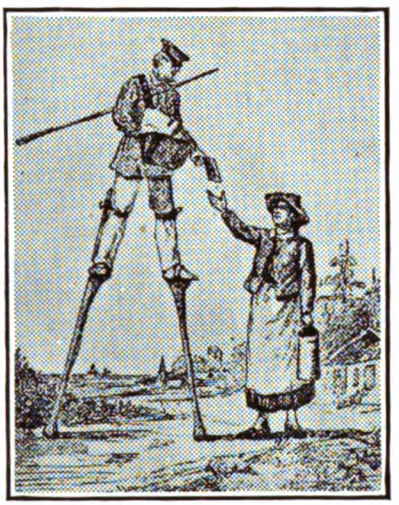
The Revolutionary War developed a rude system of signaling in this country. A pole with nothing on the top meant danger—this sign being used to avoid arousing the suspicion of the enemy. Commonplace objects, like barrels, baskets, etc., were used to convey less ominous intelligence.

Claude Chappe, a French engineer, evolved a dial-system of signaling to be read by a telescope marked by a micrometer. Cross arms were substituted for the dial and would have been immediately successful had not Chappe tried to introduce them in Paris in 1791. Probably there were already too many new ideas in Paris at that period; the seething currents of the Revolution engulfed the new invention and, although the Commune of Paris authorized Chappe to erect stations, the populace feared treachery and, lest the signals be used to communicate with the enemy, burned the stations. Later, however, the inventor's brother was elected to the Assembly and, a test being made in which a message was sent 35 kilometers and acknowledged within 11 minutes, Chappe's system was adopted. Carlyle describes with his characteristic vividness "wooden arms with elbow joints jerking and fugling in the air in the most rapid mysterious fashion"—the system which most nearly did the work of the yet unknown telegraph.

Flag signaling, used since the Middle Ages, has developed a comprehensive code and is still used in the navies of the world. Bugling is another method of signaling, still employed in military operations and effective where the distance is comparatively short.

One great difficulty of all sound signaling thus far has been its short range, and of all optical signals the necessity for clear weather. It was left to electricity to solve these two great difficulties, in the telegraph, which still left unrevealed the greater secret of complete distant communication. But electricity with its undreamed powers was in its infancy when it touched the telegraph to life. The greatness of its hidden might was yet untested.

What then, is the great secret of distant intercourse, which the ages of civilization had been powerless to track to its illusive hiding place? Is not the answer to be found in the nature and purpose of communication itself? The interchange of ideas is the soul of communication. Marvelous as is the development of means of communication and its relation

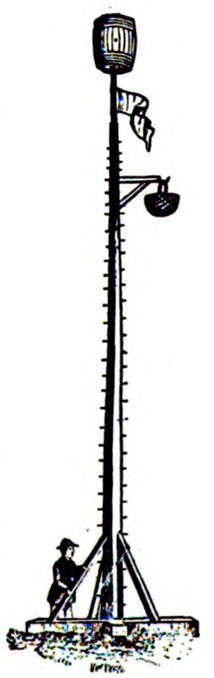


Medieval Mail Carrier Increasing Speed by the Use of Stilts—1464

to human progress, it is not the means employed that is essential, but the communication itself. At the Tower of Babel the means of communication were adequate—organs of speech were in perfect order and no distance intervened, but the people were helpless because they could not make one another understand. The bodily presence of two individuals in one place would, therefore, be worth nothing if speech did not permit the interplay of their ideas; it is the coming together of personalities, not corporeal presence, which is essential. The means of intercourse are important simply as they are used and as they develop and stimulate intercourse. The interchange of ideas is itself the educator of mankind, and in so far as historic means of communication have promoted that, they have contributed their great impulse to the increasing fulness of human living. But they have failed to accomplish the full purpose of communication in that they have admitted but a bulky and unsatisfying resource for response. Limitation in the expression of thought, longer or shorter periods of time intervening, withal a somewhat cumbersome means of interchanging thoughts, has characterized each one of them. At no time had any means been devised whereby communication between widely separated points could accomplish the same results as personal intercourse. Messengers, beacons, towers of flame and columns of smoke, carrier pigeons, printed epistles, even telegrams, involved an intermediary, and to that extent their power was insufficient. All were equally powerless to permit discussion, to permit immediate intercourse, the interaction of personalities, the give-and-take of two minds and characters. And this interaction of personalities is the aim, the whole *raison d'être*, of communication.

Intercourse over a distance has, therefore, lacked one-half of itself up to the end of the 19th century. But with the perfection of the telephone, long-distance communication came into its own. The telephone provides the perfect means of distant human intercourse by admitting the free interplay of personalities, almost as completely as if no distance intervened. Since the beginning of time the struggle has gone on to convey personality, and never has victory been so complete as it is to-day. Never indeed has the need of victory been so great, for more and more is personality coming to be recognized as a great determining factor in every phase of life. It is the power of personality above all which shapes the individual and the social life to-day. In ancient times it may have been enough that "flaming straightway leapt the courier fire from height to height" to tell that Troy had fallen, but to-day the report would be patently incomplete without a personal interview with the victor! "It is not so much what is said as the person who says it, that makes an impression," observed a distinguished essayist of to-day; and if the impression is to be made at a distance, the telephone alone permits the fullest play of personality. No intermediary dulls the quick effect; no clumsy bulwark of time alters the impression. The personalities are together; the truest, fullest purpose of communication is fulfilled.

The crowning triumph of communication has come with the completion of this great wonder of ages — the slender strand which means the union, at will, of personalities on the Atlantic and on the Pacific seaboards. At a word, a person in New York is in San Francisco. Time



Signal Post Used by the Colonists During the American Revolution

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and space are as nothing. Sound itself is a tortoise beside the swift currents which bear to the Pacific the voice, the spirit, the emotions, all the infinite and varying qualities which are the man. The intensity of New York, the snow and driving winds outside, are the physical surroundings of the speaker, but he is for a few minutes in San Francisco as completely as if transported thither by Aladdin. The Golden Gate, the riotous profusion of roses, sun-bathed orchard slopes, and the grandeur of the mountains are not more really in the Golden State than is this man who speaks from New York. It is not for these that he has taken the swift transcontinental trip, but the spiritual life, or the business problems of the West, the personal business of his conversational *vis-a-vis*, whatever the object of the communication, it is completely his.

Thus has the age-long problem found fullest revelation. Communication has become another wonder of the world. In a fraction of a second, personality, that substanceless material of the human world, the motif of civilization, spans a continent. The culminating step, thus far, in the progress of communication, this achievement stands, looking forward, and not back. The ages have evolved it; the future alone shall set the limits of its usefulness, shall mold its influence in the onward march of men.

Co-Ordinating the Nation

Telephone development in the United States has been following the laws of nature. Dr. Jacques Loeb, who has discovered many fundamental biological laws, says that a colony of minute organisms, placed in a glass jar, will swim hither and thither without regard to one another. But when a small quantity of carbonated water is added to water in the jar, the character of the activities of the crustaceans changes at once. All the members of the colony crowd instinctively toward the side of the glass from which light comes. From this phenomenon, Dr. Loeb derives the suggestion that just as the freedom of will of the crustaceans is abrogated by the admission of acid to the jar, so the actions of men respond to environing influences.

The United States might well be likened to the glass jar of Dr. Loeb's experiment. The telephone is the acid which has influenced the colony of human beings to change their social and commercial practices. When the telephone was invented, the United States consisted of 37 commonwealths loosely held together, each filled with energy and enterprise, but lacking in organization and efficiency of action.

The arrival of the telephone changed conditions. The people of the nation saw a new light. Loose ends were gathered up. The confederation grew into a compact organization of 48 states instead of 37. New living conditions were created; social and business methods were put on a broader and more efficient basis, and the passing of sectionalism and race feuds began. The nation became an organized body as it increased its use of the telephone, and there was no loss of the spirit of self-help and democracy that was its birthright. The completion of the transcontinental telephone line now brings new light to a united nation and starts a new period of growth and development as the ideal of universal telephone communication draws nearer and nearer to realization.

The Vision of the Pioneers

The ideal of a universal system of telephone communication was set up as the goal for American telephone men, as long ago as 1878. In that year, Theodore N. Vail, now president of the American Telephone & Telegraph Company, urged the agents of the infant telephone organization to renewed efforts by picturing before their eyes a "grand telephonic system" that would unite all parts of the country.

Six years afterward the Bell Companies were federated. Two of the men who prepared the articles of incorporation have lived to see part of their ambitious program of universal communication come true. These men are Thomas B. Doolittle and Joseph P. Davis. Portions of the original document furnish very interesting reading. Some of the early plans seem trifling now, when viewed in the light of what has come to pass, but they were most ambitious at the time they were outlined.

The marching orders of the Bell Companies said in part: "The general route of the lines . . . will be from a point or points in the City of New York, along all railroads, bridges, highways and other practicable, suitable and convenient ways or courses, leading thence to the cities of Albany, Boston and the intermediate cities, towns and places; also from a point or points in and through the City of New York and thence through and across the Hudson and the East Rivers and the Bay and Harbor of New York to Jersey City, Long Island City and Brooklyn.

"And along all railroads, bridges, highways and other practicable, suitable and convenient ways and courses to the cities of Philadelphia, Baltimore, Washington, Richmond, Charleston, Mobile, and New Orleans; and to all intermediate cities, towns and places; and, in like manner to the cities of Buffalo, Pittsburgh, Cleveland, Cincinnati, Louisville, Memphis, Indianapolis, Chicago, St. Louis, Kansas City, Keokuk, Des Moines, Detroit, Milwaukee, St. Paul, Minneapolis, Omaha, Cheyenne, Denver, Salt Lake City, San Francisco and Portland, and to all intermediate cities, towns and places . . . for the purpose of connecting with each other, one or more points in said City of New York and in each of the cities, towns and places hereinabove specifically or generally designated.

"And it is further declared and certified that the general route of the lines, in addition to those hereinbefore described or designated, will connect one or more points in each and every city, town or place in the State of New York, with one or more points in each and every other city, town or place in said state and in each and every other of the United States and in Canada and Mexico; and each and every one of said cities, towns and places is to be connected with every other city, town or place in said states and countries, and also by cable and other appropriate means with the rest of the known world."

There is the vision of the telephone pioneers. A large part of it already has come true, and the possibility of its full realization is created by the completion of the transcontinental talk highway.

The Invisible Plant

A Yale professor brought a class of engineering students to New York, the other day, on a tour of inspection. They visited several of the large electrical plants in the city and finally marched in on J. J. Carty, Chief Engineer of the American Telephone & Telegraph Company.

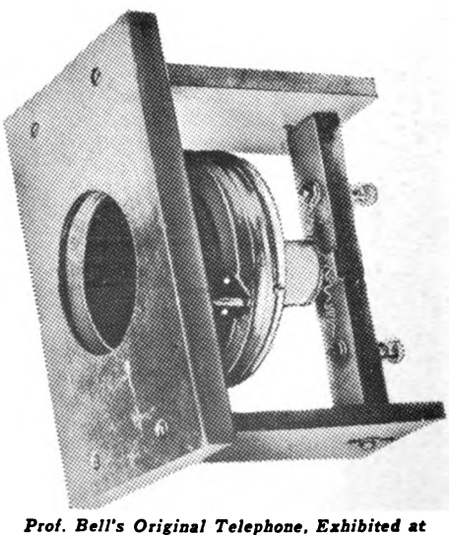
"We have come to see your plant, Mr. Carty," said the professor.

"I'm sorry," answered the first of the telephone engineers, "but you can't see it."

There was a strained pause for a moment and then Mr. Carty, smiling from behind his spectacles, led the student up to a map of the United States over which lay a maze of black lines, showing the Bell system. He told them that they could not see the telephone plant because there wasn't a man living who had ever seen it, or ever could see it. If the professor were to take his class down to the Battery, said Mr. Carty, and attempt to walk up-town to Cortlandt Street, showing them the telephone plant in that part of the city, he would fail. By the time they got to Cortlandt Street the plant would have changed. Behind them men would be putting new parts of the plant up elevator shafts, onto office desks, under the streets they had just left.

On the map which Mr. Carty showed the students there was a gap between Denver and San Francisco. But now the engineers of the American Telephone & Telegraph Company have filled the gap and a part of the telephone plant reaches without a break 3,400 miles across the continent. But the transcontinental line is only part of a plant that is woven into the fiber of the continent. Every cross-roads store with the familiar blue bell sign swinging above its door is as much a part of the telephone plant as the switchboard in the big city exchange.

Twenty-one million miles of wire connect nine million telephones of the American Telephone & Telegraph Company and associated and connected companies, giving service to 100,000,000 people. That is the statistician's description of the plant to-day. But by to-morrow he will be changing his figures again. For he is dealing with a living thing, and life inevitably implies constant change.



Prof. Bell's Original Telephone, Exhibited at the Centennial, 1876, Philadelphia, Pa.

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Gentleness

An Opportunity

WITH ALL the world waiting in the shadow of a mighty conflict; with the thoughts of men tempered by, and sensitive to, the barometric changes of resulting business conditions; with the presence daily of countless chances for commercial and social friction, the New Year brings an unprecedented opportunity and obligation for the development of that greatest of arts—the art of *gentleness.*

Two million times daily the people of the metropolis send their voices out over the telephone! Two million times daily a point of personal contact is established! Two million times daily an opportunity is presented for the practice of the art of just being kind in thought, in manner, and in speech!

With such an opportunity for the building up of the gentler qualities of American business, and such an obligation for their ever-watchful promotion, the year 1915 should be the greatest of all years in the development of *gentleness* as a predominant American characteristic.

New York Telephone Co.

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The Telephone Unites the Nation

AT this time, our country looms large on the world horizon as an example of the popular faith in the underlying principles of the republic.

We are truly one people in all that the forefathers, in their most exalted moments, meant by that phrase.

In making us a homogeneous people, the railroad, the telegraph and the telephone have been important factors. They have facilitated communication and intervisiting, bringing us closer together, giving us a better understanding and promoting more intimate relations.

The telephone has played its part as the situation has required. That it should have been planned for its present usefulness is as wonderful as that the vision of the forefathers should have beheld the nation as it is today.

At first, the telephone was the voice of the community. As the population increased and its interests grew more varied, the larger task of the telephone was to connect the communities and keep all the people in touch, regardless of local conditions or distance.

The need that the service should be universal was just as great as that there should be a common language. This need defined the duty of the Bell System.

Inspired by this need and repeatedly aided by new inventions and improvements, the Bell System has become the welder of the nation. It has made the continent a community.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY

AND ASSOCIATED COMPANIES

One Policy ***One System*** ***Universal Service***

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The TELEPHONE REVIEW
AMERICAN TELEP
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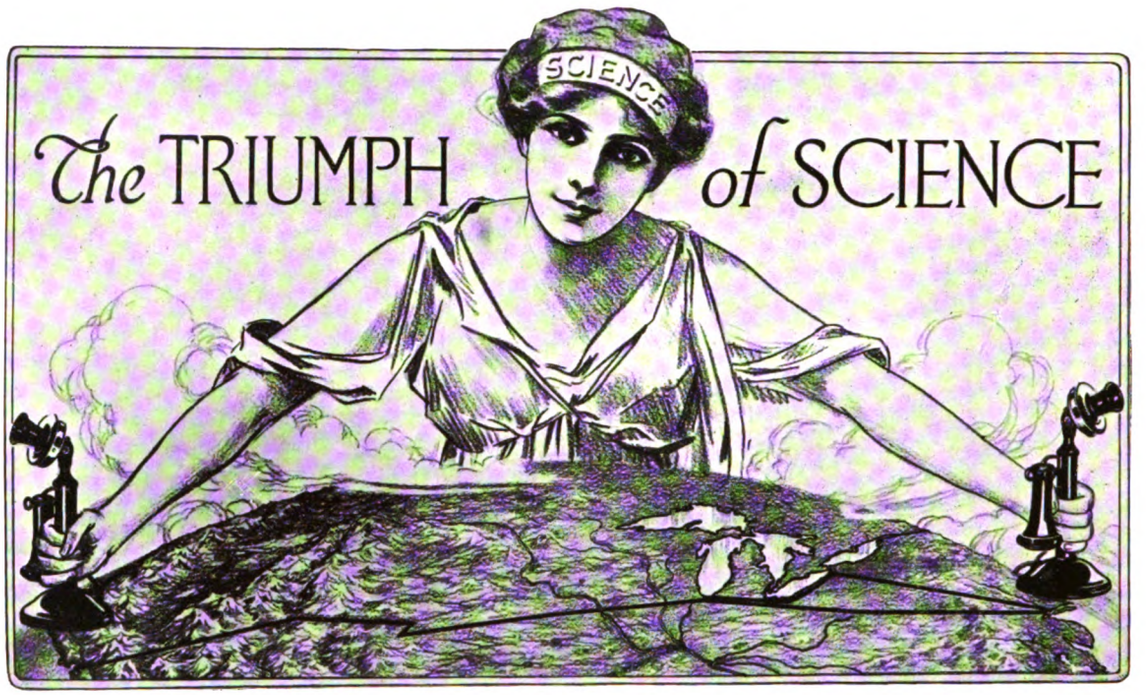
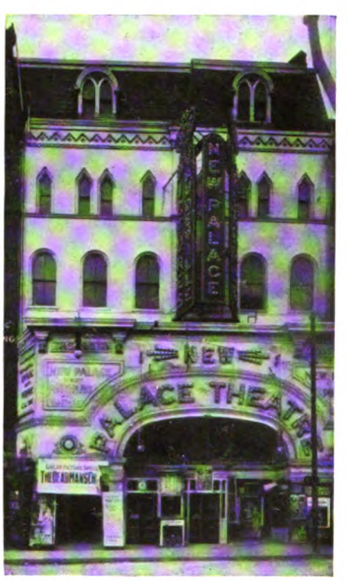
The TRIUMPH of SCIENCE EDITION
J.C. Pehl



Alexander Graham Bell as he looked in 1878.



The Birthplace of the Telephone, 109 Court Street, Boston.—On the top floor of this building, in 1875, Prof. Bell carried on his experiments and first succeeded in transmitting speech by electricity.

Thomas A. Watson, Bell's assistant, as he looked in 1878.

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The TELEPHONE REVIEW

COMMEMORATING THE COMPLETION OF THE TRANSCONTINENTAL TELEPHONE LINE, CELEBRATED AT THE HEADQUARTERS OF THE BELL SYSTEM, 15 DEY STREET, NEW YORK, JANUARY 25, 1915, AT 4 O'CLOCK, P. M.

THE TELEPHONE REVIEW
J. D. NEWMAN, Editor

Published monthly by the New York Telephone Company. U. N. BETHELL, President; WALTER BROWN, Secretary and Treasurer. Publication Office and Principal Place of Business, 15 Dey Street, New York.

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Remittance should be made by check, draft or money order, payable to the New York Telephone Company.

Statement by Mr. Vail

At the Centennial Exhibition at Philadelphia, the exhibit of the Bell System consisted of two telephones capable of talking from one part of the room to another. Faint as the transmitted speech then was it became at once the marvel of all the world, causing scientist as well as layman to exclaim with wonder.

Starting with these feeble instruments only, the Bell Company, by persistent study, incessant experimentation, and the expenditure of immense sums of money, created an entire new art, inventing, developing, and perfecting, making improvements great and small in telephone, transmitter, line, cable, switchboard, and every other piece of apparatus and plant required for the transmission of speech.

As the latest product of this unceasing organized effort there has been dedicated to the service of the public to-day a transcontinental telephone line three thousand six hundred miles long, joining the Atlantic and the Pacific and carrying the human voice instantly and distinctly between San Francisco and New York and Boston and Washington.

This telephone line is part of the Bell System of twenty-one million miles of wire connecting nine million telephone stations located everywhere throughout the United States and giving to the American people telephone service unparalleled among the nations of the earth.

THEO. N. VAIL.

◆ ◆ ◆

Statement by Mr. Bethell

The completion of the transcontinental line is not only an epoch-marking event in scientific development, but also the opening door to better conditions, commercial and social, throughout the nation. It means the breaking down of old barriers. By facilitating the exchange of information and ideas it brings the most remote points in the country closer together than were points lying within a single State a quarter of a century ago. It broadens mutual understanding and appreciation, and thus aids tremendously in the advance of civilization.

This is one of the romantic and inspiring steps in the progress of the art as developed by our great and always mutually helpful organization, which embraces in its ranks more than 150,000 men and women.

To the organization as a whole this event will have a significance that cannot be overestimated; it will exert an influence that will not end with the day, but go on working for better and greater results through years to come.

In some way, directly or indirectly, every efficient man and woman in the organization has contributed something to the achievement, and, therefore, as a whole the organization merits congratulations.

U. N. BETHELL.

◆ ◆ ◆

Statement by Mr. Carty

This greatest of telephone-lines, which to-day has been dedicated to the service of the public, must always be distinguished because through its copper wires the voice of the Chief Magistrate of this nation has, for the first time in our history, been transmitted from the seat of government at Washington westward thirty-six hundred miles to the shores of the Pacific. Over this line the voice of President Wilson was carried with magic speed across rivers and plains and mountains, instantly reaching San Francisco, where in clear tones it spoke his message of congratulation to men of achievement.

Unable to be present with us in person, Mr. Theodore N. Vail has nevertheless taken part in these ceremonies. By using the wonderful Bell System of organized men and organized wires he has talked to us here at New York from an island eleven hundred miles to the south, near the coast of Florida. From there he has spoken through the length and breadth of our land to the State of California, forty-four hundred miles away, thus attaining the longest distance ever achieved by the voice of man.

We are filled with grateful feelings that Alexander Graham Bell and Thomas A. Watson have to-day talked to each other over this now historic line. Dr. Bell was the first to conceive of the true method and apparatus for transmitting speech electrically, and Mr. Watson, following exactly the directions given to him by Dr. Bell, constructed with his own hands the first telephone. Bell was the first among men to talk by the electric telephone, and Watson was the first to hear.

There is before us an exact reproduction of this electric speaking telephone employed by Bell and Watson when first they talked to each other by wire. Through this instrument Dr. Bell has again talked to Mr. Watson, but this time how vast is the distance and how great the triumph!

Of course, he was not heard by any means so well as when he used our standard transmitter, but well enough to be understood, we may be sure, and loud enough to excite a most pleasing sentiment.

This original type of telephone talking over one of our modern lines spoke across the continent more distinctly than it ever did from one room to another over the best line of former days. Thus does this homely first instrument give testimony to the marvelous improvements made in its plant by the Bell Company during these intense intervening years.

These improvements, incredible as they are in number and magnitude, are but one stage of our never-ending progress. They have opened to us new fields filled with the richest promise. They are not the end. They are but the beginning of the future Bell System, which in effectiveness and useful service we confidently promise will surpass all that has gone before, so that in the future, as we have in the past, we will, in all things pertaining to the art of telephony, keep secure for our country the foremost place in all the world.

J. J. CARTY.

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Mr. Theodore N. Vail
on behalf of the
American Telephone and Telegraph Company
and its Associated Companies
requests the honor of the presence of
Dr. Alexander Graham Bell
at the celebration of the completion
of the Transcontinental Telephone Line
at four o'clock on Monday afternoon
the twenty fifth of January
One thousand nine hundred and fifteen
The Telephone Building
15 Dey Street, New York

Fac-Simile of the Invitation Issued to Inventor of the Telephone to be Present at the Celebration

◆ ◆ ◆

SOME INTERESTING FACTS

The New York-San Francisco line is 3,390 miles long.

There are two circuits, each using 6,780 miles of hard-drawn copper wire.

There are 870 pounds of copper wire in each circuit mile, and 2,960 tons in the entire line.

By transposing the two physical circuits, there is created an additional circuit known as a "phantom circuit."

If a voice were loud enough to be heard from New York to San Francisco, it would take four hours to travel that distance through the air.

The voice by telephone travels from New York to San Francisco in 1-15th of a second, traveling at the rate of 56,000 miles per second.

The voice of a man speaking in New York is heard in San Francisco three hours earlier, that being the difference in the standard time of the two cities.

The first sound was transmitted by telephone June 2, 1875, in Boston.

The first words were transmitted by telephone March 10, 1876, in Boston. Mr. Watson heard Prof. Bell say, "Mr. Watson, please come here, I want you."

The first conversation held by telephone took place October 9, 1876, over a telegraph-line two miles long between Boston and Cambridge. Mr. Bell and Mr. Watson talked.

The first newspaper report ever transmitted by telephone was sent from Salem, Mass., to the Boston *Globe*.

The New York-San Francisco line crosses thirteen States.

The energy freed by cooling one spoonful of water one degree would operate a telephone for ten thousand years. This baby current of electricity must take a voice 3,400 miles, and it cannot be increased, or its power to transmit speech is gone.

One hundred and thirty thousand poles are required to carry the line across the continent.

Four hard-drawn copper wires, .165 inch in diameter, carry the current from ocean to ocean.

In the loading coils for each physical circuit there are 13,600 miles of fine insulated wire 4-1,000 of an inch in diameter.

The Panama Canal was begun nine years ago and has cost $310,000,000; within the same space of time the Bell Company has spent twice that amount in its engineering construction work alone.

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OPENING OF THE TRANSCONTINENTAL TELEPHONE LINE

Dr. Alexander Graham Bell in center.—To the left of Dr. Bell, in order, Hon. John Purroy Mitchel, Mayor of New York; C. E. Yost, President Nebraska Telephone Co., Omaha; Hon. Wm. A. Prendergast, Comptroller of the City of New York.—To the right of Dr. Bell, in order, U. N. Bethell, Senior Vice-President, American Telephone & Telegraph Co., presiding; Hon. George McAneny, President Board of Aldermen, New York City; John J. Carty, Chief Engineer, American Telephone & Telegraph Co.

In front of Dr. Bell is the replica of his original telephone.—In front of Mr. Bethell is the glass case containing a piece of the wire over which Dr. Bell and Mr. Watson carried on the first telephone conversation in the world.

FORMAL OPENING *of the* TRANSCONTINENTAL TELEPHONE LINE

AT THE HEADQUARTERS OF THE BELL SYSTEM, 15 DEY ST., NEW YORK, MONDAY, JANUARY 25, 1915, AT 4 O'CLOCK, P. M.

PRESIDENT WILSON Speaks from Washington to New York and San Francisco—Dr. Bell and Mr. Watson Talk from Coast to Coast—Mr. Vail, at Jekyl Island, Florida, Listens to the Other Speakers and Talks Through New York to San Francisco, 4,500 Miles, the Longest Distance the Human Voice has Ever Been Carried—Many Business Conversations Already Have Passed Between Gotham and the Golden Gate.

The impressiveness of the ceremonies commemorating the completion of the Transcontinental Telephone Line revealed the achievement in its true light,—of awe and wonderment.

As the perspective grows, talking to San Francisco will become commonplace, just as telephoning shorter distances has become commonplace, and all thought of the tremendous import of the thing that is done will be lost; but on Monday afternoon, January 25, 1915, those who were present and saw the venerable scientist, Dr. Alexander Graham Bell, talking with his former associate, Mr. Thomas A. Watson, were made to realize that these two men were reunited in soul and spirit, although a continent separated them bodily, and that it was this reunion, and not alone the simple words they said to each other, which was made possible with the telephone by what Mr. Vail and Mr. Carty and the other officials and scientists of the Bell System have done.

This reunion was so dramatic and intense that the audience was thrilled to the point of emotion. The scene will be indelibly impressed upon every beholder, and he will be callous indeed who, as he talks over the telephone hereafter, does not feel the influence of that hour.

"It appeals to the imagination to speak across the continent," said President Wilson to President Moore, of the Panama-Pacific Exposition.

Appealing indeed, and true. In saying this the President used a conversational tone of voice, but he was heard in San Francisco much more distinctly than will be possible for persons on the outside of the audience which will gather to hear him speak when he arrives in San Francisco to attend the exposition in person.

To commemorate the triumph of science, a notable gathering met in the directors' room and offices of the American Telephone

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HON. JOHN PURROY MITCHEL
Mayor of New York

& Telegraph Company at 15 Dey Street on the above date. Chief among them were Dr. Alexander Graham Bell and his party, Mayor Mitchel, President McAneny, of the Board of Aldermen, Comptroller Prendergast, of the City of New York, and other public officials, representatives of civic organizations, presidents of national engineering societies, leaders in the commercial and financial world, prominent journalists, and telephone officials.

Seated on a platform in a corner of the room with Dr. Bell were the Mayor, Mr. U. N. Bethell, Mr. John J. Carty, the President of the Board of Aldermen, and Mr. C. E. Yost, President of the Nebraska Telephone Co.

A similar gathering was present in San Francisco, when Mr. Thomas A. Watson was the principal guest.

On the guest table were two standard desk sets and a number of hand receivers, so that every one could "listen in" while the conversations were going on. There were also on the table two unusual-looking objects, both of which were regarded with the greatest reverence. One was a replica of the original telephone conceived by Dr. Bell and made by the hands of Mr. Watson. The original is in the Smithsonian Institution in Washington. The other object, enclosed in a glass case, was a piece of the original wire over which the first telephone conversation in the world was held, the speakers being Dr. Bell and Mr. Watson. During the course of the afternoon Dr. Bell spoke to Mr. Watson through this telephone and over this piece of wire.

Simultaneously at half-past four in New York and half-past one in San Francisco (three hours being the difference in the standard time in the two cities), the ceremonies began.

Mr. U. N. Bethell, Senior Vice-President of the A. T. & T. Co. and President of the New York Telephone Co., presided in New York, owing to the absence of Mr. Vail, who was unable to be present.

Following is a somewhat sketchy account of what transpired.

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Mr. Bethell's Address

MR. BETHELL: Ladies and Gentlemen: I regret very much to say that Mr. Vail is not able to be here this afternoon. In his behalf, and in behalf of the American Telephone & Telegraph Company and the Associated companies, I bid you a very hearty welcome.

This afternoon we shall formally open the first transcontinental telephone line, spanning a distance of three thousand four hundred miles. This line forms a highway of speech between the Atlantic and Pacific coasts. A telephone network unequalled in its comprehensiveness now covers our vast country from sea to sea, connecting cities, towns, villages, and farms into what is known as the Bell Telephone System. When we remember that the telephone itself was invented no longer ago than 1875, we cannot but marvel at the position attained by this wonderful instrument as an agency in the conduct of social and commercial affairs throughout our country.

Some idea, however necessarily incomplete and inadequate, as to the size and importance of the Bell System as it is to-day may be conveyed by a few figures.

Using round figures, there are in the system, including connecting companies, nine million telephone stations and twenty-one million miles of wire. The plant of the American Company and its associated companies alone represents an investment of eight hundred and fifty million dollars.

The army of men and women engaged in its operation, exclusive of those employed by connecting companies, numbers 160,000.

The universality of the system is strikingly shown by the fact that, while in our country there are approximately 25,000 places reached by the telegraph, sixty thousand railroad stations, and a like number of post-offices, the telephone joins together no fewer than 70,000 communities.

The value of that agency, as told by the extent to which it is used, cannot be expressed in figures easily comprehensible.

The messages transmitted over its lines number approximately nine billion a year. To aid us in our attempt to catch the significance of this figure, the statisticians say it is equivalent to twenty-six million messages a day, or more than one million per each hour throughout the twenty-four.

The telephone has attained its largest measure of usefulness in the land of its birth. It is sufficient to make but one comparison. In the two cities we are joining together telephonically, New York and San Francisco, there are 685,000 telephone stations—more by 50,000 than the number in London, Paris, Berlin, Vienna, Brussels, Amsterdam and Petrograd combined. (Applause.)

The population of those European capitals is more than three times that of the two American cities named. The statistics as to those foreign cities, I may say, relate to conditions before the commencement of the European war.

From the beginning, the development of the art of telephony has been advanced in America more than in any other country, and more than in all other countries combined. American engineers, inventors, and financiers, American operating, commercial, and accounting forces, through the introduction of new ideas and practices, have always kept the Bell System of the United States in the foremost position among the telephone systems of the world and have made it, in all respects, the universally recognized model.

In the period during which the construction of another great and important undertaking, the Panama Canal, has been in progress, more than twice as much has been spent in improving and extending the Bell System as has been spent in constructing the canal. The Panama Canal and this transcontinental line will each in its way bring the West and the East into closer relations. The nation's solidarity, as well as its prosperity, depends upon its communication. The telephone, in its conquest of space and time, is rendering a distinct and unique national service, by affording an easy means for the exchange of ideas and experience, by bringing widely separated peoples and communities into

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close personal touch; it is aiding in the removal of sectional prejudices, and welding our vast country into one homogeneous unit.

It contributes constantly and most effectively to a larger and fuller individual and national life. Of those who will participate in this epoch-making event, it is impossible to mention all who have contributed to the result. In a sense, very many have contributed in one way or another, directly or indirectly. It is not easy for one to put his finger upon a particular piece of apparatus, apart from the telephone itself, and say this thing has made it possible to transmit speech from the shores of the Hudson or the islands of the Atlantic to the Golden Gate. Within our family circle we are proud of saying that great credit is due to our Chief Engineer, Mr. John J. Carty, and his whole staff. But even with the splendid work of Mr. Carty and his associates, the achievement would not have been possible, except for the courage, sagacity, and breadth of vision of our President, Mr. Vail.

During the afternoon the President of the United States will talk over this line from his desk in the White House to the President of the Panama-Pacific Exposition in San Francisco. The Mayor of New York will exchange greetings with the Mayor of San Francisco.

Mr. Vail, who happens to be at Jekyl Island, will talk from there, speaking simultaneously to Dr. Bell in New York and Mr. Watson in San Francisco.

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Mr. Bethell then introduced Dr. Bell, who rose and bowed amid great applause, after which announcement was made that Dr. Bell and Mr. Watson would talk.

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MR. CARTY: Mr. Watson is now addressing the audience at San Francisco. (Laughter.) We are just a little bit ahead of him. (Laughter.)

I was so anxious to proceed with this historic talk that I did not wish to cause the programme to lag a moment by anything that I should have to say.

To fill in the moments until we hear from Mr. Watson, I will say that to gratify a sentimentality among all telephone men, we have arranged that an exact reproduction of the first telephone that was ever made should be here for your view and inspection. There it is, in front of his Honor, the Mayor. It is a crude wooden telephone. Through that the first conversation took place—the first in the world. Dr. Bell was the first among men to speak over the electric telephone, and Mr. Watson was the first to hear; and we thought that when we were filled with thoughts of Auld Lang Syne we would bring out the old instrument and let that instrument participate in this great triumph. We are sure that Dr. Bell will talk better to-day, through that old instrument, to Mr. Watson at San Francisco, than he was ever able to talk from one room to the other with the very best line of those days. (Applause.) So that this sentiment, like all good sentiment, has a great deal of meaning beside the little bit of poetry that is in it. That has an immense significance. It shows that the telephone itself is vital, but it shows how great is the importance of the plant, and what marvelous improvements must have been made whereby the Bell plant of to-day will conduct from that crude, homely instrument the feeble tones to San Francisco, where they will plainly be heard by Mr. Watson, much louder and more distinctly than he heard them the first time that speech was ever heard over the telephone. That is the significance of the wooden box there. I expect to be told when Mr. Watson is ready, any moment, so that I will stop when I am signalled, or "flagged," as they say in railroad parlance.

HON. JAMES ROLPH, JR.
Mayor of San Francisco

Mr. Carty at this point received a signal from Mr. Gherardi, and announced that Mr. Watson was ready.

Dr. Bell then took the telephone before him, and the following conversation was held between him and Mr. Watson.

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Dr. Bell and Mr Watson Formally Open Transcontinental Telephone Line

DR. BELL: Hoy! Hoy! Mr. Watson! Are you there? Do you hear me?

MR. WATSON (in San Francisco): Yes Dr. Bell, I hear you perfectly. Do you hear me well?

DR. BELL: Yes, your voice is perfectly distinct. It is as clear as if you were here in New York instead of being more than 3,000 miles away. Do you remember, Mr. Watson, that evening thirty-eight years ago when we conversed through the telephone on a real line for the first time?

MR. WATSON: Yes, indeed! That line was two miles long, running from Boston to Cambridge. You were overjoyed at the success of the experiment.

DR. BELL: We are talking over 3,400 miles as easily and clearly as we talked over two miles thirty-eight years ago.

MR. WATSON: The telephone men have certainly done wonderful things with your invention since that first outdoor test. We mustn't forget that the circuit we are talking over is really 6,800 miles long, as, of course, the earth cannot be used for the return now as we used it then.

DR. BELL: I want to switch in another telephone and talk to you through that.

(*Dr. Bell switches in the first telephone.*)

DR. BELL: I am now talking through an exact duplicate of the first telephone, which was made in June, 1875. Can you hear me?

MR. WATSON: I hear it perfectly, though less distinctly than the other, of course.

(*Now switching back to the standard transmitter.*)

DR. BELL: What wonderful progress has been made by the Bell System since then, to enable our voices to be transmitted over a circuit of 6,800 miles without the least apparent distortion or weakening.

MR. WATSON: Their work has been

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UNION NOBLE BETHELL

Senior Vice-President American Telephone & Telegraph Co. and President New York Telephone Co.

superb, and superb also is the discipline of the organization that watches every inch of this long circuit to safeguard those feeble vibrations from the many things that might interfere with them.

DR. BELL: *All honor to the men who have rendered this great achievement possible. They have brought all the people of the United States within sound of one another's voices, and united them into one great brotherhood.*

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Everything Dr. Bell said was repeated by Mr. Watson to the audience in San Francisco, and the applause with which it was received was distinctly heard by Dr. Bell and the others who were listening in on the line.

After this conversation, all of which was heard by Mr. Vail at Jekyl Island, Mr. Carty announced that Mr. Vail himself would speak to both Dr. Bell and Mr. Watson. Mr. Carty then said:

Mr. Vail, this is Mr. Carty. All of your friends are here, and we told them that you have listened to this wonderful conversation between Dr. Bell and Mr. Watson, and that now you are going to say a few words of congratulation to Dr. Bell and Mr. Watson, and we will listen now.

The conversation between Mr. Vail and Mr. Watson covered a distance of 1,100 miles more than from New York to San Francisco, making the total distance the voices of Mr. Vail and Mr. Watson were carried 4,500 miles.

After his talk with Dr. Bell and Mr. Watson, Mr. Vail continued speaking. Turning to Mr. Bethell, Dr. Bell asked: To whom is he speaking now?

MR. BETHELL: To Mr. McFarland, the President of the Pacific Company. They are talking about the weather in Florida and the weather in California, and its relative merits.

When the conversation between Mr. Vail and Mr. McFarland was over, Mr. Bethell said to Mr. Vail:

Mr. Vail, a great many of your friends are here in the audience, and they have looked up to me and have asked me to give you their compliments, their regards, and their greetings. A number of our directors are here, and they send their compliments and best wishes.

To the audience Mr. Bethell said: Mr. Vail says he is very sorry indeed that he cannot be here; but that he thinks it is better for the demonstration, because it shows what he can do.

Hearing this, Mr. Vail made some comment, to which Mr. Bethell replied: We all know what you can do.

MR. CARTY: We are now going to have a talk between the Mayor of New York and the Mayor of San Francisco.

MR. BETHELL: Ladies and Gentlemen, the Mayor of New York will exchange greetings with the Mayor of San Francisco.

MR. CARTY (Telephone): Is Mayor Rolph there?

(Reply.)

MR. CARTY (Telephone): I will connect you with Mayor Mitchel of New York, who will now talk to you.

MAYOR MITCHEL: Hello, Mr. Mayor, As Mayor of New York, which stands at the gateway of the East, I greet you, as Mayor of San Francisco, which stands at the gateway of the West.

◆ ◆ ◆

MAYOR MITCHEL: Yes, I hear you plainly. It is a long way to San Francisco; but I think that, by the completion of this transcontinental telephone line, our respective cities are now doubly joined together—first, by the Panama Canal, which joins us together for the rapid passage of maritime commerce, and now by the telephone, which links us together by the power of the human voice.

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MAYOR MITCHEL: Yes, sir, I remember it. You know we do not take that advice in New York; but I think it is very good.

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MAYOR MITCHEL: I feel that you and I can join in congratulating the officials and engineers of the telephone company, whose genius and work have made possible this new transcontinental means of communication.

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MAYOR MITCHEL: Yes, yes. Well, we cannot put limits on it, and I am sure we do not want to.

Mr. Mayor, I look forward with a great deal of pleasure to seeing you in the spring.

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Mayor Rolph extended to Mayor Mitchel in his official capacity an invitation to Mayor Mitchel and the members of his official family to the exposition, particularly requesting that they be present on the opening day, February 20. He spoke very enthusiastically of the character and the clearness of the transmission. Mayor Rolph created some merriment by stating that it may be "a long way to Tipperary," but this is a short way to San Francisco. He told Mayor Mitchel to look out for his city: that San Francisco is growing fast, and to remember that some one said "Go west, young man."

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Frequently during the demonstration, Mr. Vail would participate in a triangular conversation, with some one in New York and some one else in San Francisco, just as it happens every day that such conversations are carried on within an office through the private branch exchange.

MR. CARTY: Is that you, Mr. Vail? We are waiting now for Honorable George McAneny, President of the Board of Aldermen, who is going to talk to Mayor Rolph of San Francisco, but the Mayor, you know, as you have heard it, is talking to the audience.

(Reply.)

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MR. CARTY: Everything is going fine, Mr. Vail.

Is that you, Mr. Rolph?

(Reply.)

MR. CARTY: Everything is going fine, Mr. Vail, and the line is working splendidly.

To the Mayor of San Francisco:

PRESIDENT MCANENY: How do you do, sir? I am very glad, indeed, to add to the greetings of the Mayor another word for our Board of Aldermen. I shall not detain you long, but I may assure you that we are all tremendously interested in everything that you are doing, over the wire to-day and through the next several months. I should be glad, if you are able, to have you send the greetings of my Board to your own local legislature. And I did not fail to catch your—hello! I say I shall be glad, if you can, to have you repeat the greetings of my Board to your own local legislature. I did not fail to catch your remark to Mayor Mitchel, that we should keep in mind the admonition about "going West, young man." (Laughter.) I want to tell you that a great many of us will take that advice during the next few months.

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Mr. Prendergast, the Comptroller of the City of New York, next talked with Mr. Moore, President of the Panama-Pacific Exposition.

COMPTROLLER PRENDERGAST: This is Mr. Prendergast, Comptroller Prendergast. I saw you when I was out in San Francisco last May.

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COMPTROLLER PRENDERGAST: It is a great delight to talk to you to-day, for two reasons: One, I am glad to talk to San Francisco, and secondly, it is the first time I have ever had a telephone-talk that I did not have to pay for. (Laughter.)

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Mr. Bethell spoke with President Moore, and announced that Mr. Carty himself would exchange a few words with Mr. Doolittle in San Francisco. Mr. Doolittle is a telephone pioneer.

MR. CARTY: Is Mr. Doolittle there?

(Reply.)

(There is so much applause out there that he cannot do any talking until it subsides.) (Applause and laughter.)

MR. CARTY: Is that you, Tom?

(Reply.)

MR. CARTY: Say, Tom, this sounds better than the first long-distance line did. Don't you remember the two copper wires we strung from Boston over to New York?

(Reply.)

MR. CARTY: That really proved that copper wire was the thing to use, and that hard drawn wire was the right sort.

Now, Tom, I am glad that you are out there to talk over this very long line. You have been preaching long-distance service all your life, and we are very happy to have you there and be able to talk to you.

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Mr. Doolittle is seventy-four years old, and retired, and it is a great satisfaction to us all to have him out there at the end of the line, rounding out his career.

Mr. Bethell then spoke to Mr. McFarland, who also wanted to speak to Mr. C. E. Yost, President of the Nebraska Telephone Co., who was present in New York at the guest table. Evidently Mr. McFarland was surprised to know this, as the conversation indicates:

MR. BETHELL: Hello! Mr. McFarland. Is that you, Mac? Mr. McFarland, we have quite a number of people here, and among them a great many friends of yours. First, I want to just greet you across the continent in behalf of the New York Telephone Company and the A. T. & T. and to say that Mr. Yost, Mr. Sunny, Mr. Gentry, Mr. Pettingill, Mr. Williams, Mr. Kilgore, Mr. Moran, Mr. Alling, and Mr. Nime are all here, and all send their greetings to you. (Applause.)

Good-bye, Mac.

MR. BETHELL: Is Mr. Yost here? Why, yes. (Aside.) I wish to say that Mr. Yost is the dean of the presidents of our associated companies. He objects to my using that word, but it fits him so well that I must do it. I am going to ask Mr. Yost to say a few words to Mr. McFarland.

MR. YOST: Hello, how are the wife and kids? This line talks up pretty well, doesn't it?

MR. CARTY: Mr. Yost is speaking to you now, Mac.

MR. YOST: Hello, Mac!

(Reply.)

When are you coming east?

(Reply.)

That blooming exposition is going to take all your time, surely. All the old boys are here, and they all send the kindest greetings.

(Reply.)

No, I am not in Omaha. I am in New York. (Laughter.)

(Reply.)

All right. Well, I can hear you very plainly indeed, Mac. Good-bye.

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MR. BETHELL: This ends the formal talk, in which you will not participate, but an arrangement of telephones will be found in each of the rooms by which all of you may listen to these conversations across the continent, and the conversations will be kept up. Meanwhile, I would like to detain you just a few moments for another sort of pleasure. I know it will be a great pleasure to all of you to hear a few words from the Mayor of New York. (Applause.)

◆ ◆ ◆

Mayor Mitchel Addresses the Audience

MAYOR MITCHEL: Dr. Bell, Mr. Bethell, and ladies and gentlemen:

It is a very great pleasure, of course, for all of us to be able to participate in this ceremony to-day, which marks the inauguration of telephone service between San Francisco and New York. I think nothing could testify more loudly to the business enterprise and scientific achievement of Americans than the perfection of the telephone service of the country to a point which permits conversation to be held between San Francisco and New York.

I am sure that we, of New York, are very proud to be able to own a company that has achieved this, as one of our own here in New York. We feel that it is an achievement for the City of New York.

I know that you all join with me in extending the heartiest congratulations to the engineers and officers of this company who have been able to bring this about, and in wishing them the same measure of success in the future as has attended them in the past. (Great applause.)

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Mr. Vail's Tribute to Mr. Carty and His Subordinates

MR. BETHELL: I have a message from Mr. Vail which I would like to read, despite Mr. Carty's modest protest:

"Mr. Carty:

"Congratulations to the man who, by his personality, initiative, and the practical application of his wonderful mastery of the telephone service in particular and of electrical science in general, has brought about such results.

"What entitles you to words of appreciation and thanks is not the achievement of bringing the extreme limits of our country together for intercourse so much as the tremendous, marvelous improvement which has been brought about in the whole service upon which the public are now so dependent.

"You have more than accomplished that which you dreamed of five years ago, and that which you have accomplished stands as your sponsor for making tangible, during the next five years, the dreams now in your mind.

"Subordinate to yours, but still large, is the credit due to your staff of scientists and experts who have absorbed your enthusiasm, caught your spirit, and so successfully seconded your efforts.

"To them and to you, the world and the Bell System owe an appreciation which I am but feebly expressing.

"THEO. N. VAIL."

(Great applause.)

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Mr. Carty's Tribute to His Subordinates

MR. CARTY: Of course, it is such a leader as that who brings out all there is in men. All of my men and all of our men know that these words are intended for us all.

When, at four o'clock this morning, I was a little bit concerned about the sleet and I wished to find out what the state of affairs was, I then saw a vision of the Bell System at work.

This is not a firing-line, but in a way it is analogous to a firing-line. It is not a firing-line 350 miles long, but it is a line of peace 3,400 miles long east and west, and 1,100 miles long north and south, with 200 more to be added to-night, when there is to be a celebration in Boston.

In order to insure the integrity of these circuits, we made some extra preparation. It would seem that they were elaborate. But I found that only twenty-five per cent. more of our staff was at work than is ordinarily at work.

In the directors' room I hope that each of you will have an opportunity of seeing the great map, because that represents the lines of the Bell System. There are about 1,500 men scattered over this line, from this room, where temporary headquarters are established and all of these men are co-

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ordinated. I think it is true that never before have men been co-ordinated over such a vast length of line from one point. We have men in the Sierras with snowshoes and men down in the southern land with automobiles and bicycles. We have men on the plains, in the bad lands, with mules, and others with saddle horses, and we have men on foot. There is no section of this vast land but what, if word is given here, a man will reach it inside of two hours, and in other sections it can be reached instantly. This morning, when I called up in a routine fashion, one of the men had gone off duty and another had come on. I wanted to know how things were going, and I got the temperature of almost every foot of that line. Sleet was forming in New Jersey three-quarters of an inch thick. In the neighborhood of Pittsburgh trouble was brewing. The Midland to Boston was out, but at three o'clock there were three men at work on it and it was fixed. Out in the middle west there was trouble. I was, as it were, feeling the pulse of the organization all over the line. I went back to bed because there was nothing to be done but wait; and I slept until eight o'clock. Then I found out that at Scranton it was falling off and that out west, at Chicago, it was cold and clear. Of course, Jekyl Island could not fail, because such a thought as that could never enter our heads.

I wish that I could convey to you the enthusiasm, the ability, the faithfulness of the men and women working on this project to-day. It seems large. It is like a great maneuver. It has taught much, it has taught us as much about our system as any maneuver would teach an army. There is much for the army to learn here because any one of those fifteen hundred men might have represented a colonel, or a commander of a brigade, or any other number of men. Battles are now fought by telephone; and, to be able to manage the telephone, to get the message back and forth, to have a good understanding at the different ends of the line, and to be a good telephone operator, is now becoming a part of the duty of the Commanding General.

So that, from that point of view as from one thousand others, there is much to learn.

I mention the thought to say that we are proud of these men who are scattered all over that map to-day, who are not here in this nice warm room to hear these words of praise passed out to the Chief Engineer; but I am glad to say one thing: that they all know that I know what they are doing, and where the praise belongs, and I never miss an opportunity to pass it down along the line. (Applause.)

It is, of course, worth living for to hear such praise from Mr. Theodore N. Vail. But the way the praise works in the Bell System, when it is received, is not to give a man the big head, but it is to make him think seriously and wonder whether he deserves it, and if he does not, he is impelled by the strongest possible movement to get out and begin to deserve it, if he does not already. Because the way to try to live up to the reputation that is passed out in this way is a task of infinite magnitude for him. But that is the way it works in the Bell System. And one of the mottoes that I have put out to the boys, and it is really the unwritten motto of the Bell System, is the motto that sustains all these men away from the limelight. Every one would stay at his post until he died—so would the operators; they have never left a post of duty in time of flood, conflagration, or cyclone—neither have our men. And the motto which I have suggested for them and which they live up to is:

" 'Tis not in mortals to command success,
But we'll do more, Sempronius,—
We'll deserve it."

And they all deserve it, and, so far as in my power lies, I am going to help them achieve it.

"* * * the telephone which links us together by the power of the human voice."—*The Mayor of New York to the Mayor of San Francisco.*

"It appeals to the imagination to speak across the continent."—*President Wilson.*

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Dr. Bell's Address

MR. BETHELL: I have great pleasure in calling upon Dr. Bell to favor us. (Great applause.)

DR. BELL: Mr. Chairman, ladies and gentlemen:

Mr. Vail's picture is just over my head. Every word that Mr. Vail says in that letter of endorsement of Mr. Carty I endorse and believe in thoroughly, and to-night I think that the success of our demonstrations of to-day is very largely due to Mr. Carty and to his able body of assistants here. (Applause.)

It is with very great interest that I look upon this model of the old telephone—the first speaking telephone ever made. This is a reproduction of it which I hold in my hand, and to hear this instrument talk between New York and San Francisco is a revelation, showing convincingly to my mind that the telephone system of to-day is the product of many minds, and not the product of one alone. This old instrument would not have spoken to San Francisco in the old days of 1875 when it was built. It is due to the many minds at work in the telephone company, and their experiments, and the researches of others that the difficulties of transmission on long lines have been overcome, and this little instrument, that feebly talked in 1875, now serves to carry on a conversation with my old friend Watson in San Francisco. It is really very touching to me to converse with Mr. Watson over that old instrument. He and I were the first to use the speaking telephone. As Mr. Carty has very properly remarked, I was the first to speak, and Mr. Watson was the first to hear; for I could not hear anything that he said, but he seemed to hear a good deal of what I said. (Laughter and applause.) And it was that appreciation that encouraged me to believe that the telephone really was a concrete thing at last.

This instrument, interestingly enough, I think, came into existence first as a theoretical conception. The instrument just as you see it here was invented in the summer of 1874, during a visit that I paid to my father and mother in Brantford, Canada. It was a theoretical conception. It was not made for a year afterward. You can well imagine, as you look at that crude construction, that it might be apparent that you could not expect that the vibration of a little steel armature in front on an electromagnet would produce electrical undulations of sufficient power to amount to any practical result. It was thought to be necessary to increase the amplitude of these electrical undulations; and so, for a whole year, attention was taken up in trying to develop what is now known as a variable resistance plant in which the strength of the current should be dependent upon a battery, and not simply created by the action of the voice. So that it was a whole year before this instrument was made. Mr. Watson made it in June, 1875, and it was a very difficult thing to hear it talk.

In 1876, the instrument, in a little improved form, was exhibited at the Centennial Exposition; and if it had not been exhibited there, it might have been many years before it would have been known to the world. The instrument was very slightly different from this.

Later on, in 1876, attempts were made to use it upon a real telegraph-line. Hitherto experiments had only been made from one room to another in the same house.

The first experiment on a real telephone-line was made in Brantford, Ontario, on the lines of the Dominion Telegraph Company; but it was only transmission in one direction. A person talked to the transmitting telephone, the sounds were received by a telephone with which we could not talk back, and communication in the reverse direction had to be made along another telegraph-wire.

Later on, however, we were enabled to get reciprocal communication in Boston, and especially on a very famous occasion when Mr. Watson, in Cambridgeport, and I, in Boston, conversed over what was a magnificent distance in those days—two miles of telegraph-wire! Just think of it! Two miles! It was a great triumph. The conversation that took place was the first reciprocal conversation that was ever held over a telephone, over two miles of wire. Every word was taken down at either end, and in the newspapers of the day you will find the parallel columns of what was heard at Boston and what was heard in Cambridgeport, and it was Mr. Watson and I who held that conversation. It is especially interesting, therefore, for me to be able to greet my old assistant, Mr. Watson, over 3,400 miles of space, and even talk to him through the same telephone that we used to talk over in the old days. It shows me what great progress has been made by the telephone company in overcoming the difficulties of long-distance transmission until now we actually have a transcontinental line in successful operation.

I cannot tell you how deeply I feel at seeing this old instrument here. It was a dream then. It has become a reality now. And that reality has been accomplished through the agency of Mr. Vail, Mr. Carty, and all the good men of the American Telegraph & Telephone Company. (Applause.)

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MR. BETHELL: It seems that the President of the United States, Mr. Wilson, is not yet quite ready to talk, and instead of waiting just as we are gathered here, we think after a picture is taken, we will go into the various rooms so that all may take part in those conversations, and when the President is ready to favor us we shall again, perhaps, assemble here.

"Of course, it is such a leader as that, who brings out all there is in men."—*Mr. Carty, referring to Mr. Vail.*

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MR. CARTY: There has been a request that Dr. Bell say to Mr. Watson the first words over the old telephone, and Dr. Bell has kindly said that he would do so. We will get Mr. Watson on the other end of the wire in San Francisco. It will only take a moment, and we can all hear them talk.

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MR. CARTY (Aside): Mr. Watson is coming to the telephone. Hello, Mr. Vail. Hello, Mr. Vail.

(Reply.)

MR. CARTY: We are going to have Dr. Bell—by request Dr. Bell is going to speak through the old telephone again to Mr. Watson and use the first words that they employed.

(Aside.) Mr. Watson must be rescued from a group of reporters.

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DR. BELL: I have been asked to say to you the first words that you understood over the telephone, and through the old instrument, "Mr. Watson, come here, please, I want you." (Laughter and applause.)

(Reply.)

MR. CARTY (Aside): He says it would take him a week to get there now. (Great applause.)

5:45 P. M.

MR. BETHELL: The President of the United States is now about to talk to Dr. Bell in New York and Mr. Watson in San Francisco.

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The President Speaks

PRESIDENT WILSON: I want to say to you, Mr. Watson, that I consider it an honor to be able to express my admiration for the inventive genius and scientific knowledge that have made this possible and my pride that this vital cord should have been stretched across America as a sample of our energy and our enterprise. I want to convey to you my personal congratulations, sir.

MR. WATSON (Speaking from San Francisco): I thank you from the bottom of my heart, Mr. President. I consider it a great honor to talk across the continent for the first time with the President of the United States.

MR. CARTY (Speaking from New York): Now, Mr. Watson, we will introduce Dr. Bell, who is here, to the President.

DR. BELL: I am very glad to have the opportunity of talking to you, Mr. President, over the first transcontinental telephone line.

PRESIDENT WILSON (Washington): I am very much obliged to you. I want to congratulate you very warmly on this notable consummation of your long labors and remarkable achievements. You are justified in feeling a great pride in what has been done. I think this will be remembered as a memorable day. I convey to you my warm congratulations.

DR. BELL (New York): Thank you very much for your kind words, Mr. President. I think we have always got to remember that the telephone system of the United States is the product of a great many minds and not of one alone. I thank you very much.

PRESIDENT WILSON (Washington): But there has been one leading mind.

MR. BELL (New York): Thank you.

PRESIDENT WILSON: Thank you. Good-bye.

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MR. CARTY: Is Mr. Vail there? Hello, Jekyl Island.

(Reply.)

MR. CARTY: Mr. Vail has talked today from Jekyl Island up to New York and then across the continent, making a distance of 4,500 miles.

Hello, Mr. Vail.

MR. VAIL: Who is this?

PRESIDENT WILSON: This is the President.

I am glad to hear your voice. I have just been speaking across the continent this afternoon.

MR. VAIL: Oh, yes.

PRESIDENT WILSON: Before I gave up the telephone, I wanted to extend my congratulations to you on the consummation of this remarkable work.

MR. VAIL: Thank you.

PRESIDENT WILSON: I am very sorry to hear that you are sick.

MR. VAIL: I am getting along very nicely. I am sort of a cripple, that is all.

PRESIDENT WILSON: I hope you will be well soon. Good-bye, Mr. Vail.

MR. VAIL: Thank you. Good-bye, Mr. President.

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President Wilson spoke first to President Moore, of the Panama-Pacific Exposition, saying:

It appeals to the imagination to speak across the continent. It is a fine omen for the exposition that the first thing it has done is to send its voice from sea to sea. I congratulate you on the fine prospects for a successful exposition. I am confidently hoping to take part in it after the adjournment of Congress. May I not send my greetings to the management and to all whose work has made it possible and has made it the great event it promises to be and to convey my personal congratulations to you?

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At eight o'clock the same evening the Boston-San Francisco line was formally opened, and a large group of officials and guests in New York remained to "listen in." An interesting feature of this celebration was a conversation in Chinese between Loo Cum Chu, Manager of the Chinese Telephone Exchange of the Pacific Telephone & Telegraph Co., San Francisco, and Wong Y. Sue, Chinese Passenger Agent of the Southern Pacific Co. at Boston.

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INCIDENTS

Dr. Bell sent his voice over a 3,000-mile trial trip to test the efficiency of the reproduction of the first crude telephone in talking to the other side of the continent. A circuit was established from the model of the 1876 telephone in President Vail's office, through the switchboard at Omaha, Nebraska, and back to New York. Here the second terminal was a standard instrument in a room adjoining President Vail's office.

Dr. Bell first listened at the modern telephone receiver while Mr. Carty talked into the model of the original instrument. Dr. Bell could hear Mr. Carty's words perfectly.

The minutes passed, and as Mr. Carty continued to talk into the old device from New York through Omaha and back to New York to Dr. Bell, the excitement of the venerable scientist grew. "Let me use the old instrument," he cried, and he hurried into the room where Mr. Carty was talking.

The two men changed places. This time Dr. Bell talked into the replica of the first telephone instrument while Mr. Carty listened at the modern telephone. Dr. John A. Brashear, of Pittsburgh, an old friend of Dr. Bell and formerly director of the Allegheny Observatory and an inventor and manufacturer of astronomical instruments, was standing near Mr. Carty and Mr. Carty handed him the instrument. "Hello, Dr. Brashear," said Dr. Bell. "I recognize your voice. You are in the next room, but we are talking over 3,000 miles of wire." The two men conversed for a short time and then Dr. Bell "hung up" by replacing the boxlike instrument on the table. He turned to the men gathered around him. "It's wonderful!" he said. "Simply wonderful!"

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Melville Bell Grosvenor, the thirteen-year-old grandson of Alexander Graham Bell, is the first boy to talk across the continent. The boy's father, Gilbert H. Grosvenor, of Washington, D. C., is director of the National Geographic Society and editor of the *National Geographic Magazine*.

Mr. Grosvenor spoke with San Francisco and then turned to his son. "I want you to talk, too," he said. "This is something you will never forget." He spoke into the transmitter again. "My son wishes to talk with you."

The youngster took the instrument. "Hello," he said, in his high-pitched voice. The reply must have been an expression of pleasure at "meeting" the grandson of Dr. Bell, for the boy answered: "I am very glad to meet you, too. How is the weather out there? Hello, yes, I can hear you perfectly."

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Dr. Bell's party consisted of himself and Mrs. Bell, their daughters, Mrs. Gilbert H. Grosvenor and Mrs. David Fairchild, Mrs. John J. Carty, Messrs. Gilbert H. Grosvenor and Edwin P. Grosvenor, and Dr. and Mrs. Bell's grandsons, Melville Bell Grosvenor and Alexander Graham Bell Fairchild.

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The first members of the New York police force to talk over the Transcontinental Line to San Francisco were Detective Sergeants August Mayer and Grover C. Brown.

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To celebrate the event, the Mayor of Petaluma, Cal., had the fire-bells rung for one hour, beginning at 1:15 P. M. San Francisco time.

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The Transcontinental Telephone Line is open commercially. The rate established from New York to San Francisco is $20.70 for three minutes' conversation and $6.75 for each succeeding minute. But it must be remembered that the rate is for the round trip, and that about $2,000,000 worth of plant will be at the exclusive use of the patron during the period of the conversation.

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"HELLO, 'FRISCO!"

ACROSS THE CONTINENT IN STORY AND PICTURE

FATHER KNICKERBOCKER SALUTES MISS CALIFORNIA BY TELEPHONE

Blazing the Trail for the Transcontinental Telephone Line

Less than forty years ago, Alexander Graham Bell, standing in a little attic at No. 5 Exeter Place, Boston, sent through a crude telephone, his own invention, the first spoken words ever carried over a wire, and the words were heard and understood by his associate, Thomas A. Watson, who was at the receiver in an adjacent room. On that day, March 10, 1876, the telephone was born, and the first message went over the only telephone-line in the world—a line less than a hundred feet long. The world moves a long way ahead in the span of one man's life. On Monday afternoon, January 25th, this same Alexander Graham Bell, sitting in the offices of the American Telephone & Telegraph Company, at New York, talked to this same Thomas A. Watson in San Francisco, over a wire stretching 3,400 miles across the continent, and part of a system that includes 9,000,000 telephones, connected by 21,000,000 miles of wires.

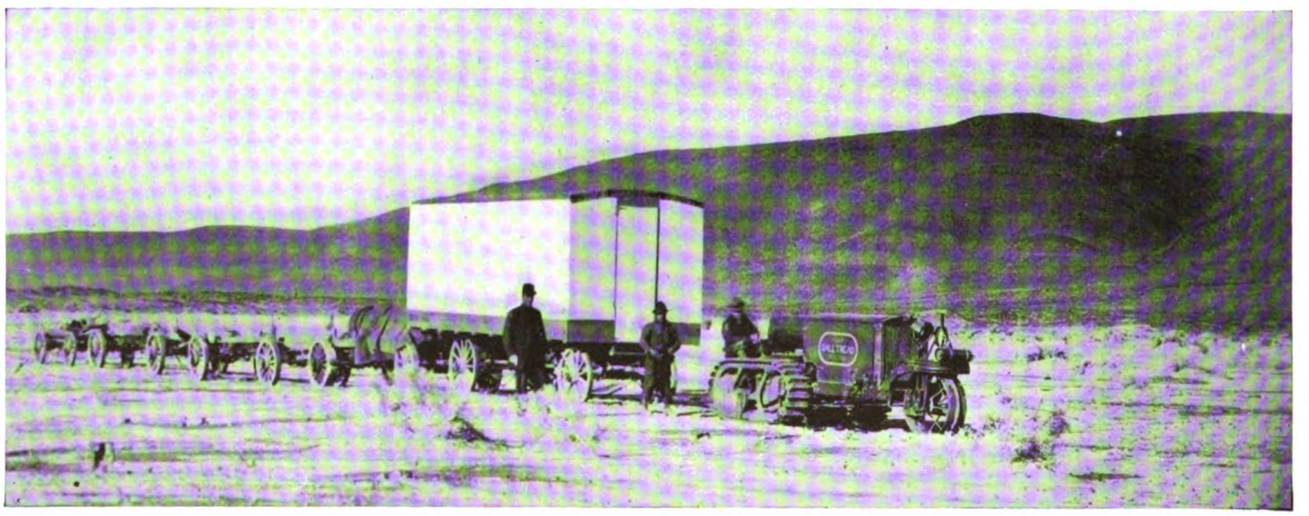
In that same memorable year of 1876, Dom Pedro de Alcantara, Emperor of Brazil, visiting the first telephone exhibition at our first great national show, the Philadelphia Centennial, picked up the receiver, listened as Professor Bell talked at the other end of the room, and, amazed at the wonder of the thing, cried out: "My God—it speaks." Had Dom Pedro lived to see the Panama-Pacific Exposition he could have heard Professor Bell talking to him, not merely from the other end of a room, but from the other side of a continent.

The Panama-Pacific Exposition itself, planned to celebrate the completion of the Panama Canal and the joining of the Atlantic and Pacific oceans, will mark a still closer welding of the East and West. When its gates are thrown open on February 20th, San Francisco will not only be nearer to New York through a shortening of its waterways, but will be in constant and instantaneous touch with it through the medium of speech. It is a curious fact, too, that this second great feat of engineering, this other canal, this even more intimate connection between the two seaboards, has been completed in the same year. Quietly, almost unnoticed, but steadily and bravely, while the gigantic steam shovels were cutting their way through the earth in the South, the engineers of sound and electricity were weaving their magic webs through the air and pushing on toward the Golden Gate. Their work has been less spectacular, it has excited little attention, but these men have met obstacles as hard to overcome as the Culebra slide, and they have conquered them. The long-dreamed-of Transcontinental Line is no longer a dream. New York can talk to San Francisco.

The Transcontinental Line Open

Monday, January 25, 1915, has taken its place among the momentous dates in the annals of science and human progress. On that day, in the presence of groups of prominent men on either coast, the Transcontinental telephone wires were given their first public test, and the completion of the line was formally celebrated. Distinguished men in the offices of the Pacific Telephone & Telegraph Company in San Francisco conversed freely with distinguished men on the Atlantic seaboard, and one more great chapter in the history of telephony was finished as Bell, sitting in the offices of the American Telephone & Telegraph Company in New York, talked to Watson across a continent.

There was no hitch in the programme, or any doubt as to the immediate success and practicability of the new line. Those who talked over the telephone did not raise their voices above the usual conversational pitch, and the replies came back from across the continent, clearly and instantaneously. There was no more effort, delay, or in-



Fast in the Sand—A Tractor Rescues the Cook Wagon

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Making Camp. The Stone House on the Left Was Used as a Stage House Before the Days of the Railroad

distinctness than in talking across a table. Professor Bell says that he thought out the telephone in Salem. A fitting place for its conception—there is witchcraft in it, and the most blasé of business men in the offices of the American Telephone & Telegraph Company on Monday felt something akin to uncanniness at the thought that his voice had gone across thirteen States, shot over prairies and through forests, hurtled through cities, climbed the Rockies, skimmed across the desert and reached the Pacific coast, and the answer had come back to him in an eye-wink.

A Dramatic Moment

There have been few more dramatic moments in the history of science than when the venerable Professor Bell lifted the receiver from its hook and called to Watson, the friend and fellow workman of his youth, in far-away San Francisco. There was a wonderful story in that first "Hello," a marvelous tale of miracle-working, of heroic struggle and sublime achievement. Few men have seen so great a dream come true; probably no two men before, in all the history of the world's discoveries and inventions ever lived to see such magnificent results from work in which they had been the pioneers. Hardened telephone-users as all of those present were, and accustomed to big events as most of them were, a hush that was tinged with awe, an almost solemn silence, fell on the assemblage as the great inventor talked to his associate. Every one felt that he was taking part in an epoch-making event, that, in the future, school children would be made to learn January twenty-fifth as one of the big dates in the world's scientific, commercial, and political history, one that ranked with that other day when "What wonders hath God wrought" was flashed over Morse's wire.

In the Space of a Lifetime

Most wonderful of all, perhaps, in the minds of those present at the opening of the new line was the fact that this achievement, the crowning glory of so vast and complex a system, had taken place within the space of a man's lifetime. On March 10, 1876, Professor Bell, working away at the simple telephone he had invented, called to his comrade, "Mr. Watson, come here, I want you," and Watson heard that first of

The Surveyor Sets Up His Transit to Start the Work

More of the Surveyor's Job—Measuring the Span

all telephone messages over the wire. In New York on January 25, 1915, the same voice was talking and, in San Francisco, the same ear was listening as on that spring day thirty-eight years ago, but under what different conditions! Then the struggling young inventor and his associate had just succeeded in producing the only telephone in the world and in talking over a few feet of wire. Ahead of them were years of ridicule for their invention, indifference to their plans, and opposition to their efforts. On this other great day they saw their simple contrivance as part of a vast system joining together the country's greatest and most distant cities and serving the uses of 100,000,000 people. Not many men have seen so great a fulfilment of their early ambitions, no other invention has ever taken so great a stride in so brief a time.

It *has been* a tremendous stride, for when Bell invented that first feeble receiver it was the beginning of telephones. There had been nothing like it or anywhere near like it in all the ages. It was a creation—as far as scientific apparatus was concerned, it was made out of nothing. More than that, this crude instrument—just capable of transmitting speech the length of a room—was all Bell gave to the art of telephony, but it was enough. The American Telephone & Telegraph Company and its associated companies have done the rest.

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The Real Problem

Just what this "rest" means can be fully appreciated by those only who know the difficulties to be overcome by the telephonic engineer and the subtlety and delicacy of the forces with which he has to deal. The very minuteness of things makes his task herculean. Instead of having to figure on immense weights and masses, he is baffled by infinitesimally small fractions. His energies are devoted to conservation, and conservation of the most intense kind.

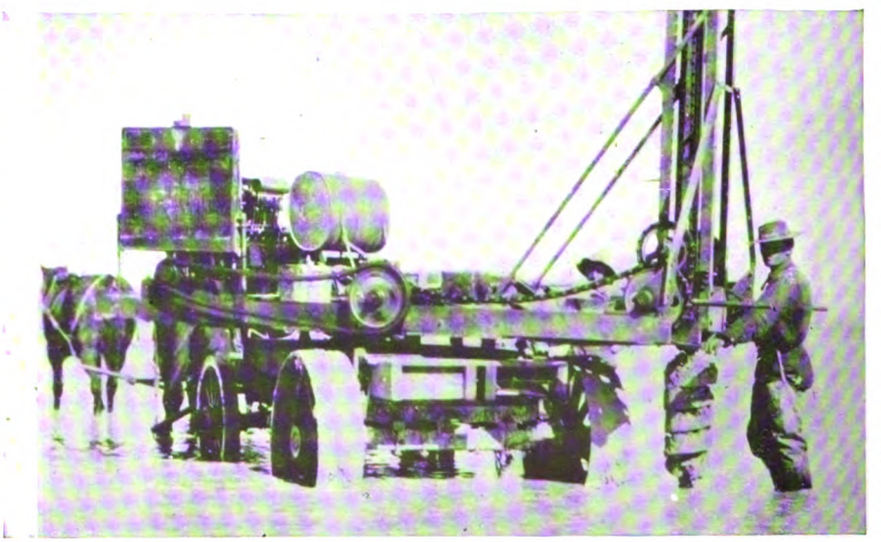
It was, perhaps, a little more difficult to string wires from Denver to San Francisco than from New York to Denver, but the actual construction of the line was the least of the engineer's troubles. His real problem was to make the line "talk," to send something 3,000 miles with a breath as the motive power. In effect, the voyage of the voice across the continent is instantaneous; if its speed could be accurately measured, a fifteenth of a second would probably be nearly exact. In other words, a message flying across the continent on the new Transcontinental Line travels, not at the rate of 1,160 feet per second, which is the old stage-coach speed of sound, but at 56,000 miles per second. If it were possible for sound to carry that far, a "Hello" uttered in New York, and traveling through the air without the aid of wires and electricity, would not reach San Francisco until four hours later. The telephone not only transmits speech, but transmits it thousands of times faster than its own natural speed.

The Next Step—Driving the Stake

Some of the Difficulties of Hole-Digging

But while the telephone is breaking speed records, it must also guarantee safe delivery to these millions of little passengers it carries every few minutes in the way of sound waves created at the rate of 2,100 a second. There must be no jostling or crowding. These tiny waves, thousands and thousands of varying shapes, which are made by the human voice, and each as irregular and as different from the other as the waves of the sea, must not tumble over each other or get into each other's way, but must break upon the Pacific coast just as they started at the Atlantic, or all the line fails and the millions of dollars spent upon it have been thrown away. And in all this line, if just one pin-point of construction is not as it should be, if there is one iota of imperfection, the miles of line are useless, and the currents and waves and sounds and words do not reach the end as they should. It is such tremendous trifles, not the climbing of mountains and the bridging of chasms, that make the Transcontinental Line one of the wonders of the ages.

The engineer in telephony cannot increase his motive power. A breath against a metal disk changes air waves into electrical currents and these electrical currents, millions of which are required for a single conversation, must be carried across the continent and produce the same sound waves in San Francisco as were made in New York. Here is a task so fine as to be gigantic. In his "History of the Telephone," Herbert N. Casson says that the energy set free by cooling one spoonful of water just one degree would operate a telephone for ten thousand years. It was to nurse and coax this baby current of electricity three thousand miles across the continent, under rivers and over mountains, through the blistering heat of the alkali plains and the cold of snow-capped peaks, that has taken the time and thought and labor of the brightest minds of the scientific world.



Boring Pole-Holes Across Lake Humboldt, Nev.

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Over Mountainous Countries Paths Had to be Made by Teams Distributing Poles

Solving the Problem

Never has been such a skillful and patient lot of trained nurses, though, as this invalid of a current has had. Beginning with that first timid step in Boston, thirty-eight years ago, they have led the weakling on, mile after mile, to city after city, till it has reached the other coast.

Who did it? Who made this wonderful achievement possible? Ten thousand men, beginning with Bell and Watson tinkering away at that first crude telephone in an attic, forty years ago. It has taken an army of thoughtful, conscientious, patient men, keen of brain and skilled of hand, striving day and night for the one great end—the perfection of a system and the conquering of time and space. In office, laboratory, and shop, under the earth, high up in the air, they have thought and experimented and toiled, always aiming toward this idea of universal service.

There has been no isolated problem; literally as well as figuratively the development and perfection of the system have been "all along the line." The fight, this new "Winning of the West," has not been a duel, to be won by a single inventor struggling for the solution of some one big problem; but a battle, a campaign, in which thousands have helped to overcome a thousand hindrances and imperfections and difficulties.

When the telephone left the hands of Bell and Watson, it was "an essentially perfected instrument" in the eyes of the law, that is, it did what was claimed for it—it talked—but that was all. The diaphragm was simply an animal membrane tied around a piece of wood and in touch with a magnet. From this acorn the oak of the Bell System, nation wide, has grown. From this small beginning, the Transcontinental Line has been evolved, and it *has been* an evolution. In the words of President Theo. N. Vail, it is "the cumulative effect of improvements, great and small, in telephone, transmitter, line, cable, switchboard, and every other piece of apparatus or plant required in the transmission of speech." In all the 3,400 miles of the line there is no one spot where a man may point his finger and

Across Lakes and Alkali Sinks Another Problem Was Encountered in Hauling Poles

Pole-Setting Crew Starting for Work. In This Section of Nevada Horses Were Soon Exhausted by the Salty Air

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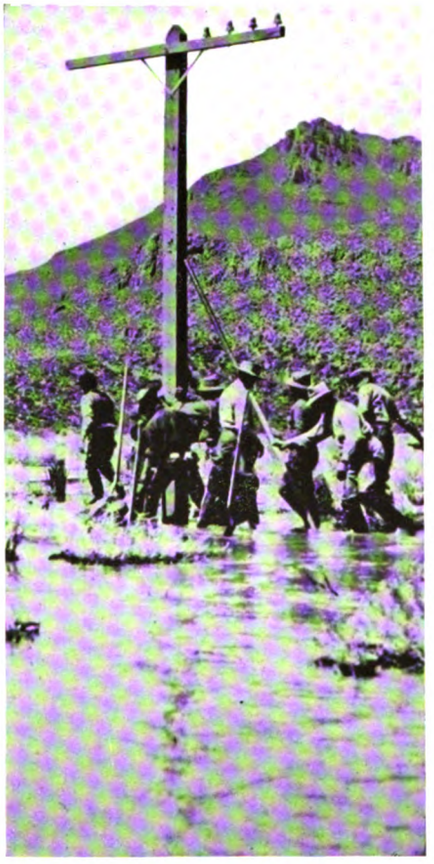
say: "Here is the secret of the Transcontinental Line; here is what makes it possible to telephone from New York to San Francisco." Rather, it is the perfection at every point that has brought this about. It is the development of the transmitter at New York that makes the receiver at San Francisco do its work so well; it is the improvements in the receiver at San Francisco that cause the transmitter at New York to perform its functions so admirably; it is the perfecting of every inch of line and every bit of mechanism between them that enables the instrument at New York to talk and that at San Francisco to hear.

The Magnitude of the Task

In spite, however, of the fact that, compared with the electrical problems, the mere engineering task of constructing the line may appear simple to the scientist, no one can run his finger over the route of the new line on the map without being impressed with the magnitude of the under-

Setting a Pole in the Uplands



Pole-Setting Crew at Work in a Swamp

taking. The data and figures are tremendous. The line crosses thirteen States, it is carried on 130,000 poles. Four hard-drawn copper wires, .165 inch in diameter, run side by side over the entire distance, establishing two physical circuits and one phantom circuit. One mile of a single wire weighs 435 pounds, the weight of the wires in the entire line being 5,920,000 pounds, or 2,960 tons. This, of course, is the transmission wires alone. In addition to these, each physical circuit uses some 13,600 miles of fine hair-like insulated wire, 4-1,000 of an inch in diameter, for its loading coils.

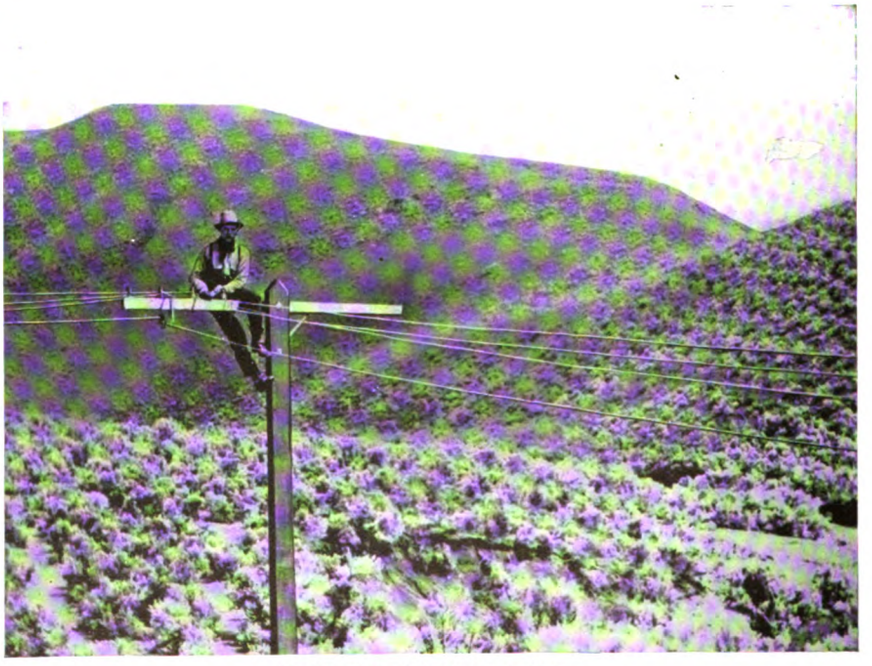
Simply to string this immense amount of wire across the continent, to set the poles and insure insulation, to conquer the innumerable difficulties offered by land and water, forests, mountains, deserts, rivers, and lakes, was in itself a task of no mean magnitude. The Panama Canal is hailed as one of the greatest achievements of the world's workers, as it is, but the almost invisible lines of the Bell System, considered simply as to labor and cost, constitute a monumental achievement.

The Canal was begun nine years ago and has cost $310,000,000; within the same space of time the Bell Company has spent twice that amount in its engineering construction work alone.

Two Leaders in the Work

The building of the Transcontinental Line depended on the solution of no one isolated problem, nor will the glory of it be given to any one isolated individual, but there are a few names that will always stand out above the rest in connection with it. There must be great generals for armies that win such victories.

For many years this line from ocean to ocean has been the dream of Theodore N. Vail, President of the American Telephone & Telegraph Company, the goal toward which he has pushed and toward which he has steadily led his associates and the army of his employees. Not the dream of a dreamer, but the prophetic vision of a practical, forceful, capable man, a man of unlimited business energy and knowledge, who could see anything in telephony except impossibilities. He not only cannot see them, but will not admit that they exist; he does not find the word "impossible" in his dictionary of engineering terms. Almost from the beginning of the telephone, his energy and enthusiasm, his dauntless optimism and ambition in everything re-



The Next Step is to String the Wires

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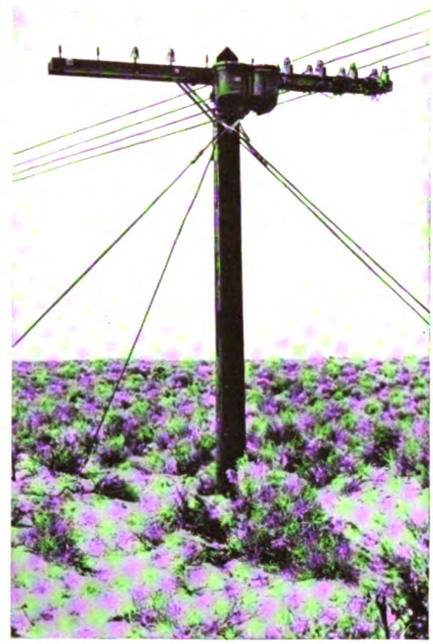
Moving Westward Again to the Next Stop

lating to its perfection and promotion, and his idea of "universal service," have dominated the company and made enthusiasts of every one connected with it in great things or in little.

At his side through most of these years has been a slightly built, lithe, keen-eyed man, who never has to be told but once when a great thing is to be done. A nod, and a line goes to Denver; a word, and it stretches to the Pacific coast. That is John J. Carty, Chief Engineer of the American Telephone & Telegraph Company. A leader among the scientific men of all nations and honored by their rulers for his distinguished services in engineering accomplishment, his wide knowledge, his keen judgment, and his indomitable energy have combined to make him one of the great factors in telephone achievement and advancement. He is the wizard of the wires. Long ago he said this great thing could and should be done, and through the great banks of silence that separated the East from the West, this Goethals of electricity has been cutting his way, year by year, until the great canal of human speech is done.

Others have played big parts in this drama of human endeavor and achievement, and thousands have given their share of thought and labor, but, whoever is forgotten or remembered, the names of Vail and Carty will be linked with this new triumph of science as long as man talks to man.

There has been no greater achievement in the history of the Bell Company, none in history of telephony, few in the history of the world. The gain to science is great. Immeasurably more precious, however, is that to the nation, and incalculably greater are the benefits to commerce and society. What the Transcontinental Line means to the future of the country, what it will bring about by drawing the East and West closer together, how much of increased prosperity and happiness these thousands of miles of wire will insure, no man can gauge.



Loading Pot on the Line

What It Means to the Country

One of the most prominent of the guests who talked over the longest of long-distance telephones at the celebration said:

"I thought I had got over wondering at the miracle of the telephone, but what I have just done amazes me as much as the first words I heard over the wires many years ago. Even now I can hardly conceive that it is possible. I have talked over long distances many a time before, but this is far beyond the limit. Chicago I am used to, even Denver; but this talking from the Atlantic to the Pacific gives one a thrill. It appeals to the imagination—it is a theme for poets.

"What it means to the country it is impossible to estimate. For one thing, it is a final blow to sectionalism—it has put a seal on the fact that there are no longer East and West, North and South. Not even the railroads or the new canal have done or can do so much toward bringing the States closer together and uniting them more firmly, not only in commerce, but in thought and language. Provincialism will become rarer and rarer; localisms,

Camping in the Nevada Brush

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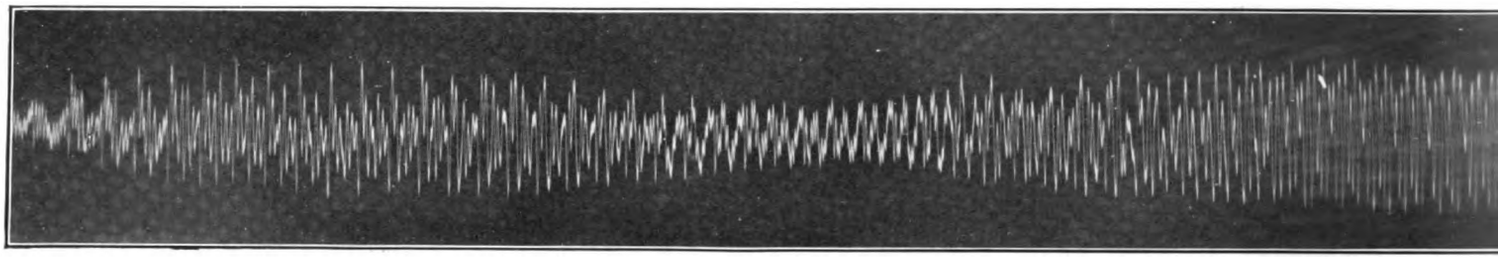

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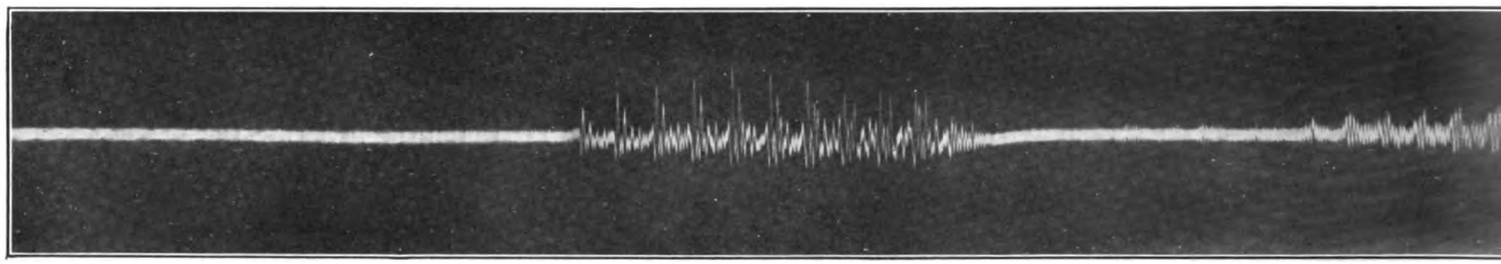

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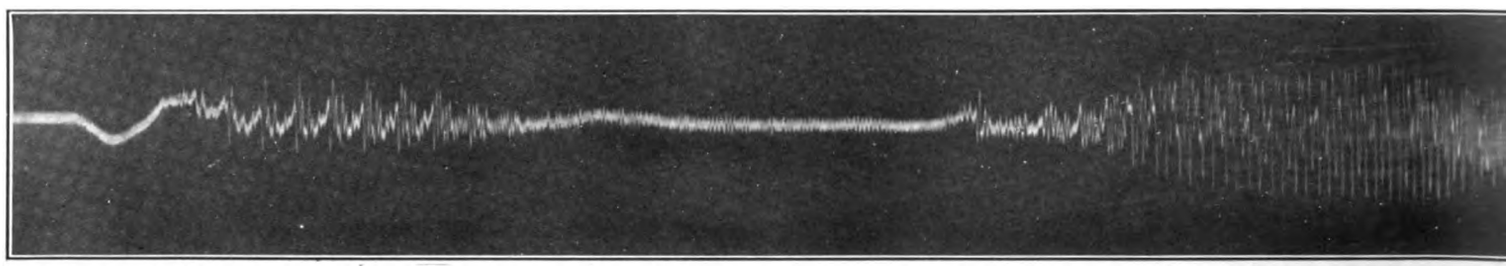

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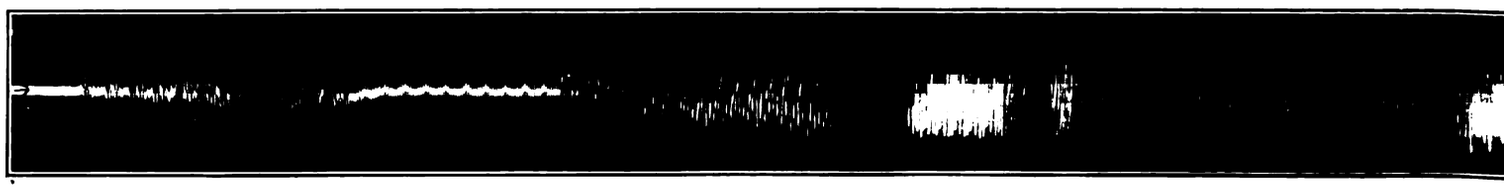

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THE ABOVE ILLUSTRATIONS REPRESENT THE CHANGES IN THE ELECTRIC
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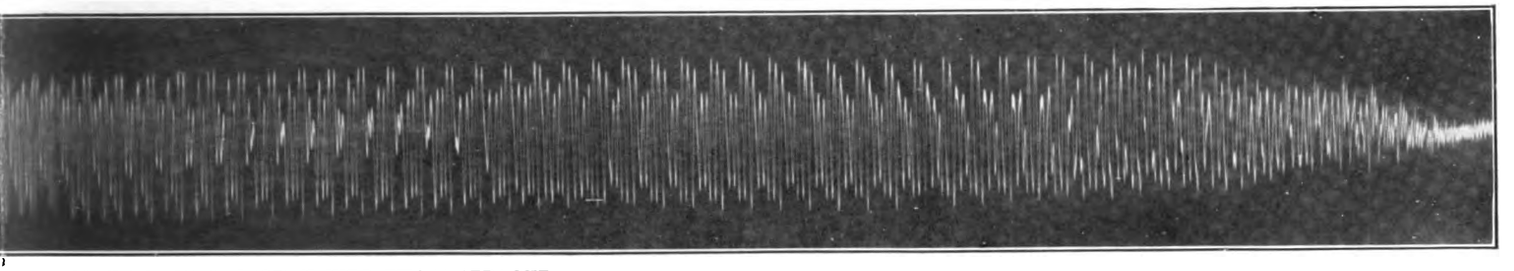
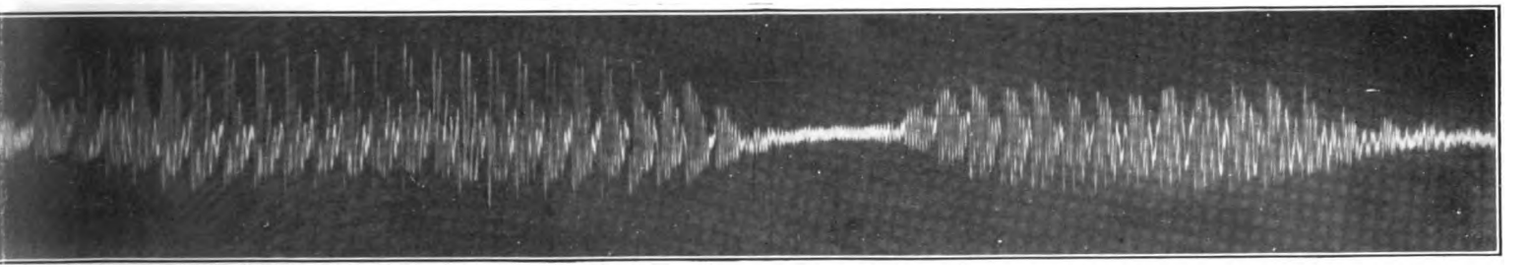
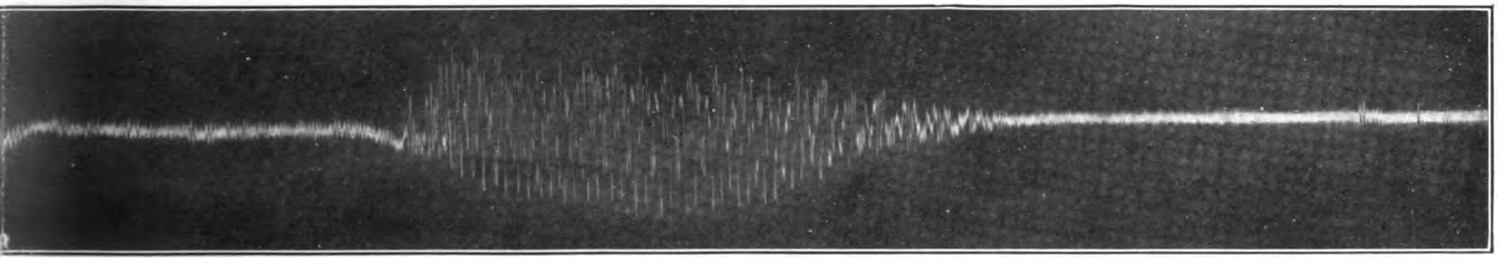


WORD "NEW YORK" IS SPOKEN INTO THE TELEPHONE

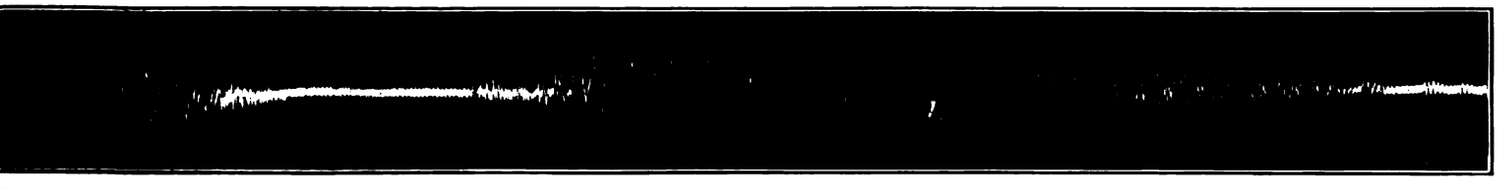
RD "SAN FRANCISCO" IS SPOKEN INTO THE TELEPHONE



WORD "ATLANTIC" IS SPOKEN INTO THE TELEPHONE



WORD "PACIFIC" IS SPOKEN INTO THE TELEPHONE



WORD "AMERICA" IS SPOKEN INTO THE TELEPHONE

AL CURRENT WHICH TAKE PLACE IN A TELEPHONE CIRCUIT WHILE THE WORD ABOUT FIVE FEET OF SUCH A PICTURE REPRESENTS THE CURRENT CHANGES NE SECOND.

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Crossing a Bad Stretch. Miles of Poles Are Set Across Lakes Varying in Depth from 18 In. to 3 Ft.

dialects—all such things that depend on isolation—are getting to be an impossibility in the United States, and the telephone has been the greatest agent in bringing about this desirable condition. It is hard for people to get very far apart when they are in such constant touch with one another, and I know of nothing which is doing more to strengthen the bonds between individuals and communities than the network of wires the American Telephone & Telegraph Company is spreading over the country. So much importance do I attach to this idea that, extreme as the statement may seem, I believe quite firmly that, had the telephone system reached its present perfection previous to 1861, the Civil War would not have occurred. The wires would not have let the North and South drift so far apart."

Universal Service

The new Transcontinental Line is a concrete exemplification of the possibilities of universal service and a justification of the arguments for a single system. Under no other plan would such a line be possible. This line, 3,400 miles long, and joining the Atlantic and Pacific, is part of the great Bell System of 21,000,000 miles of wire, connecting 9,000,000 telephone stations located everywhere throughout the United States. Comprising this system are the American Telephone & Telegraph Company and its associated and connecting companies, thousands of them, giving instant and perfect communication among 100,000,000 people.

The opening of this line is the culmination of the Bell idea of universal service—in presenting it for the use and convenience of the public, the American Telephone & Telegraph Company renders an account of its stewardship. It has fulfilled its promise, and, not only in itself, but as an earnest of what is to follow in future development, this nation-wide line proves that it is the intention of the American Telephone & Telegraph Company to make it possible for every man who can talk to talk over the telephone to every man who can hear.

The telephone was born here, and it has reached its greatest perfection here; under no other conditions, except such as exist in the United States, could it have come to its highest development. With its dozens of telephone systems, Europe has no long-distance line to compare with this. The Transcontinental Line is a culmination of an art that was born in the United States, the high-water mark of a science that was created and has been developed entirely by American genius and enterprise. It is the highest achievement of practical science up to to-day—no other nation has produced anything like it, nor could any other nation. It is *sui generis*, it is gigantic—and it is entirely American.

Occasionally the Line Touches "Civilization"—Hazen, Nev.

Critical Moments in Nature

Destiny often is determined in a flash. What Dr. Newell Dwight Hillis calls "critical moments in nature" occur constantly, but since time began these moments have passed unnoticed save by those able to

Extremes of American History—The Transcontinental Telephone Line Passing Through an Indian Village

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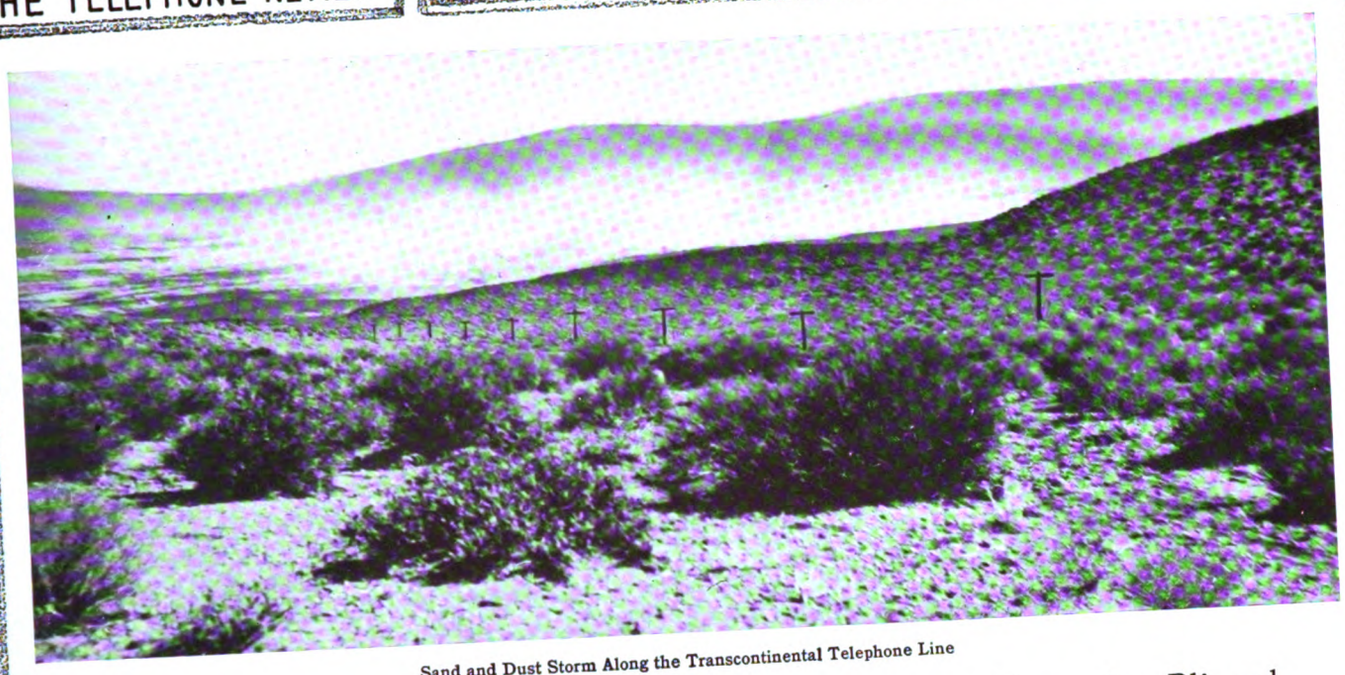

Sand and Dust Storm Along the Transcontinental Telephone Line

see and seize the opportunities presented and so shed new light upon the world of the unknown.

Galileo found a lens in the eye of an ox and gave the world the telescope; Watts saw steam lift an iron lid and the theory of steam power was born; Columbus, sailing in search of a new passage to the Far East, noticed an unknown wood drifting near his vessel and discovered a new world. Alexander Graham Bell, leaning over a crude machine connected by wire with a similar instrument in another room, heard the sound of a twanging reed come over the wire and gave the world its greatest known means of intercommunication. Each man recognized a "critical moment in nature," and so made destiny.

The completion of the Transcontinental Telephone Line, however, is the result of the seizure of hundreds of "critical moments in nature." One after another these moments came to the men who have been struggling to solve the mysteries of an art that was unknown thirty-eight years ago. And because they were able to see the significance of the moments that arose they have now succeeded in bridging the continent with a talk-highway that puts East and West within speaking distance and eliminates the barriers of distance in the United States.

Linemen's Shelter House, Three Miles West of the Summit of the Sierra Nevada Mountains, California

Linemen in a Blizzard

Probably nothing can better suggest the difficulties which telephone men have to encounter and the hardships they endure in some parts of the country than the accompanying photographs of shelter houses —one a mile west of Crystal Lake, Cal., and the other three miles west of the Sierra Nevada Mountains in the same State. These houses are built along the Transcontinental Line in isolated mountainous regions and are frequently occupied by the linemen as they maintain the telephone line during the cold and storms of the winter months. The houses contain a couch, a small stove, cord-wood, and canned provisions, and are used as a temporary shelter by the men when caught in a blizzard. These blizzards last, on an average, from two to three days, the snow frequently drifting to depths of from 15 to 20 feet.

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"From the beginning, the development of the art of telephony has been advanced in America more than in any other country, and more than in all other countries combined."—*Mr. Bethell.*

Linemen's Shelter House, One Mile West of Crystal Lake, Cal.

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Some of the Leading Personalities Who Made the Transcontinental Telephone Line

Alexander Graham Bell, Inventor of the Telephone
Thomas A. Watson, Associate of Prof. Bell in 1876
Theodore N. Vail, President American Telephone & Telegraph Company
U. N. Bethell, Senior Vice-President A. T. & T. Co.
J. J. Carty, Chief Engineer, A. T. & T. Co.
Bancroft Gherardi, Engineer of Plant, A. T. & T. Co.
C. E. Scribner, Chief Engineer, Western Elec. Co.
Frank B. Jewett, Asst. Chief Eng'r, Western Elec. Co.
Michael Idvorsky Pupin

ALEXANDER GRAHAM BELL

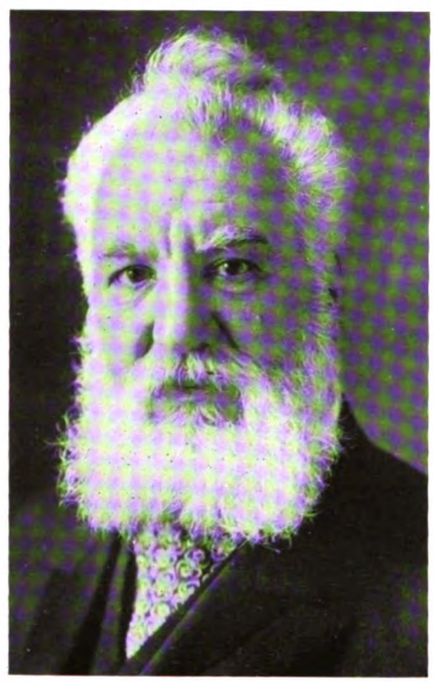
Alexander Graham Bell has had the rarest of human experiences. He has lived to see the dreams of his youth come true. When he talked into a replica of the first telephone transmitter at the celebration of the completion of the New York-San Francisco telephone line, there were nine million telephones in the Bell System, serving 100,000,000 persons. Forty years ago Bell talked of sending the human voice over electric wires and men gaped at him in pity.

The inventor of the telephone was born in Edinburgh, Scotland, on March 3, 1847. He was the son of Alexander Melville Bell, the dean of British elocutionists and inventor of the system of "Visible Speech." The boy was educated at Edinburgh and London, and acquired a smattering of music, electricity, and telegraphy. At the age of sixteen he taught elocution in British schools, and by the time he was of age he had met several noted scientists who encouraged him in his studies of sound.

In 1870 he went to Canada and the next year came to Boston as professor of vocal physiology in Boston University. His system of teaching deaf-mutes won immediate recognition, and his success encouraged him to open a school of his own. He went to live at the home of five-year-old Georgie Sanders, one of his pupils, in Salem, and in the Sanders cellar, after school hours, he started a series of inventions that were to culminate in the telephone. For three years he worked with tuning-forks and magnets and batteries and in 1874 he had evolved the idea for what he called his "Harmonic Telegraph." This was a device for sending a number of Morse messages over a single wire at the same time by utilizing the law of sympathetic vibration. Bell used a telegraph transmitter and receiver, an electromagnet, and a flattened piece of steel clock spring.

One day in the winter of 1874 Bell took his harmonic telegraph to the electrical workshop of Charles Williams, of 109 Court Street, Boston, where Thomas A. Watson was employed. Watson made six instruments at Bell's instructions and thereafter devoted most of his time to working out in brass and iron the ideas that came pouring out of Bell's active brain. The two young men labored day and night at their experiments in the Williams workshop and out at Salem. All the while there was a dream that haunted Bell. It was that somehow, some day, he could get an electric wire to carry the human voice. On June 2, 1875, after months of countless experiments on the harmonic telegraph, something happened that convinced Bell that at last he was on the right track. One of the transmitter springs of his telegraph instrument stuck and the magnetized steel generated a current that sent a faint noise over the electric wire to Bell's receiver. Thereafter it was a question of working out details. This was all the proof Bell needed to persuade him that the principles were right.

On March 10, 1876, in a boarding-house



Alexander Graham Bell

at 5 Exeter Place, Boston, where the two were experimenting, Bell in his room on the top floor put his mouth to the telephone and said:

"Mr. Watson, come here, I want you." Watson came rushing into the room shouting: "I heard you; I could hear what you said."

Bell decided that he had made sufficient progress to justify him in exhibiting his invention at the Philadelphia Centennial. He was shoved into a corner and overlooked by the public until Dom Pedro, Emperor of Brazil, who knew Bell as a master of acoustics, happened along. Bell explained the telephone and persuaded the Emperor to listen at a receiver while he talked. Dom Pedro dropped the instrument, exclaiming: "My God, it speaks," and the amazement of the distinguished visitor attracted attention to its cause. Bell and his invention were soon the main features of the Centennial.

Bell returned to Boston to persuade an incredulous public that he had a practical means of instantaneous communication. It was no easy task. With a few loyal friends behind him he did heroic missionary work, lecturing up and down New England, everywhere prophesying that some day men would talk as readily from Boston to New York as from one room to another. The press reflected the universal scepticism; funds ran low—those were dark days for the young inventor. But finally in August, 1877, when Bell's patent was sixteen months old, there were 778 telephones in use, and the pioneers decided that the time had come to organize the business. "The Bell Telephone Association" was created with no capital and a membership of four men,—Bell, Watson, Gardiner G. Hubbard, Bell's father-in-law, and Thomas Sanders, father of Bell's pupil and sole financial backer of the telephone.

Bell was an inventor, not a business man, and after 1877 he had little active connection with the organization of the telephone industry. He married in that year and went abroad to help introduce the telephone in England. But before he sailed, he suggested to Watson that as soon as the telephone became a matter of routine business the two should begin experimenting on flying-machines. Watson turned to building battle-ships, but Bell, always a long way ahead of his time, took up the problems of flight with his characteristic energy.

In February, 1913, *The Scientific American* printed an account of patent No. 1,050,601, just issued. Dr. Bell received this for a vertical balancing rudder for aeroplanes, thirty-seven years after receiving patent No. 174,465 for the telephone. In May, two years ago, he announced an attempt to be made by one of his assistants to cross the Atlantic in an aeroplane in seventy-two hours. To invent what has been called one of the seven modern wonders would satisfy most men, but it did not satisfy Alexander Graham Bell.

While Theodore N. Vail and his associates were busy making Bell's membrane transmitter a universal household servant, Professor Bell was inventing a telephone probe for the painless detection of bullets in the human body and receiving for it the degree of M.D. from the University of Heidelberg. In 1883 Dr. Bell's name once more appeared before the public, associated this time with the names of C. A. Bell and Sumner Taintor in the invention of the graphophone. A little later he returned to his first love—the study of acoustics—and organized a movement for the teaching

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of speech to the deaf along the lines of visible speech.

It has always been Dr. Bell's practice to keep complete records of his scientific researches, and the volumes into which these records are bound now number several hundred. They tell a story of an intellectual life of almost unprecedented activity. A recent visitor to Dr. Bell's home at Washington was permitted to examine records made from 1908 to 1913. There were thirteen volumes, each as thick as a law-book and each containing 500 pages. The index to one of these volumes covered such subjects as experiments on aircraft, the scientific breeding of sheep, the utilization of waste heat, a new metric system, experiments in preserving food, notes on eugenics, and the biological history of a cat. Dr. Bell said to his visitor, and this was but two years ago:

"I have never felt stronger intellectually. My mind has a greater power of concentration than it ever had. It seems to be quicker, and it does not tire along the lines in which I am interested. I sometimes work for 18 hours at a stretch."

Dr. Bell has received many honors. The French Government awarded him the Volta Prix in 1880. He received a medal from the London Society of Fine Arts in 1902. He is an officer of the French Legion of Honor. At one time he was President of the National Geographical Society and he is a member of the National Academy of Sciences, the American Philosophical Society, a fellow of the American Academy of Arts and Sciences, and a member of the American Association for the Advancement of Science. He spends his winters in Washington and his summers near Baddeck, N. S.

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THOMAS A. WATSON

Thomas Augustus Watson, associate of Alexander Graham Bell and first Superintendent of the Bell Telephone Company, was born at Salem, Mass., on January 18, 1854. He attended the public schools of Salem until he was thirteen years old, when he began to earn his own living. He had a love for science that sundry jobs such as clerking, bookkeeping and carpentering failed to satisfy, and he did not find a vocation that really held his interest until he entered the electrical workshop of Charles Williams at 109 Court Street, Boston. Mr. Williams encouraged individual initiative among his employees, and Watson at work among call-bells, annunciators, galvanometers, telegraph keys, relays, registers, and printing telegraph instruments, soon showed the good effects of such a policy. He experimented for himself in the fascinating fields that the new science of electricity was opening out, and after hours he delved into other branches of science. A steam-engine that he built when business was slack was the embryo of the biggest ship-building plant in the United States, of which he was many years later to become the head.

Williams, though his force never numbered more than 40 or 50 men, had one of the largest and best-fitted electrical shops in the country, and to it there came inventors who wanted their ideas set down in brass and iron. Because of his mechanical ability and ready comprehension of new principles, Watson was their favorite workman.

He was busy with some experimental torpedo-exploding apparatus which he was preparing for Moses G. Farmer when Alexander Graham Bell came into the shop one day in the early winter of 1874. At that time Bell was full of his designs for a "Harmonic Telegraph." When Watson finished his work on the torpedoes he made half a dozen pairs of the harmonic instruments for Bell. This was the beginning of an association that was to continue for years. Bell's active mind provided enough ideas to keep Watson steadily employed. The two experimented together, out at the Sanders house in Salem, where Bell was living, and in the Boston workshop until June 2, 1875.

On that day, while the two young men were at work on the exasperating harmonic instruments, one of Watson's transmitter springs stuck, and the slight noise that Watson made in attempting to free it sounded in Bell's receiver. This was enough to convince Bell that a wonderful idea which he had some time before confided to Watson could be worked out. He dropped his harmonic telegraph scheme and set out to make electrical wires carry the human voice. All the experiments that followed concerned themselves with the working out of details.

On March 10, 1876, Bell and Watson had moved to a boarding-house at 5 Exeter Place, Boston. They had run a wire from Bell's room on the top floor to a room below, where Watson stood with a receiver at his ear. It was over this wire that Watson heard the first words ever uttered by the telephone.

"Mr. Watson, come here, I want you," said Bell, and up the stairs ran Watson

Thos. A. Watson

shouting: "I heard you; I could hear what you said."

Watson was but twenty-two years old when the telephone was patented. Bell was seven years older. Upon such young shoulders lay the task of persuading a sceptical public that wires could talk. They had behind them, it is true a small group of enthusiastic men, some of them willing to lend financial aid, but it was the missionary work done by Bell and Watson that turned the tide in the telephone's favor. Up and down the country went Bell telling what he had done, and for proof he let the myriad of scoffers hear Watson's voice across the wires. Watson recited poetry, sang songs, and shouted himself hoarse into the ears of audiences addressed by Bell. Although he spoke at every one of Bell's lectures, to this day Mr. Watson has never heard his associate deliver an address. He was the invisible but convincing testament to this new miracle's verity.

Fred Gower, a Providence newspaper man, was one of the earliest of the converts that these lectures were making on every hand. He proposed a scheme for a dual lecture in the course of which Watson spoke from a central point to two halls at the same time. It was at one of these, in which Watson talked from Middletown, Conn., to Bell at New Haven and Gower at Hartford, that Watson made his last appearance as "*deus ex machina*."

He let Gower tell the public what the telephone would mean, and went back to his laboratory to make some of the lecturer's promises true. This was in 1877, and for two years Watson worked steadily at developing some of the principles of the art of telephony. The engineering department of the Bell Telephone Company consisted of Watson and two others. Today Chief Engineer J. J. Carty, of the American Telephone & Telegraph Company, has 550 engineers and scientists at work under his direction. Mr. Watson's name is associated with the invention of the magneto-electric call-bell and with the automatic switch, which was the culmination of a series of experiments he started at that time. He held a number of offices in the first Bell Company and was Superintendent from 1878 until 1881.

In 1881 Mr. Watson's connection with the telephone industry ceased and he went abroad for a two years' rest. On his return to this country at a time when Dr. Bell began experimenting on air-ships, Mr. Watson became interested in battle-ships. He associated himself with those who were endeavoring to revive the glory of the days when every New England harbor was white with the shipping of the Seven Seas. From 1884 until 1900 he was a member of the ship-building firm of F. V. Wellington & Company.

By 1900 he had become one of the leaders of the ship-building industry, and it was Mr. Watson who founded the great Fore River Ship & Engine Company at Quincy Point, Boston Bay. At this concern, one of the largest in the country, many of our navy's dreadnoughts, now in service, were constructed. The fame of the company went abroad and foreign governments sent in orders to Quincy Point.

In 1903, when the battle-ships *Vermont* and *New Jersey*, the protected cruiser *Des Moines*, and the destroyer *MacDonough* had been completed under Mr. Watson's direction, Rear-Admiral Francis T. Bowles, head of the naval construction work, was called to the presidency and Mr. Watson retired from active business.

In 1913 he delivered an address before

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the third annual convention of the Telephone Pioneers of America on "The Birth and Babyhood of the Telephone." This reminiscent account of the early days of the telephone by the man who had so active a part in its invention has since been put into pamphlet form and is considered one of the most valuable contributions to the history of telephony.

Mr. Watson is now living at East Braintree, Mass. He is a member of the American Association for the Advancement of Science, the Boston Society of Natural History, and the Massachusetts Horticultural Society.

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THEODORE NEWTON VAIL

Theodore Newton Vail, President of the American Telephone & Telegraph Company, is a lineal descendant of John Vail, the Quaker preacher who settled in New Jersey in 1710. He was born in Carroll County, Ohio, July 16, 1845, and is the son of Davis and Phœbe (Quinby) Vail.

His grandfather, Lewis Vail, a civil engineer, went to Ohio in the early days and became prominent in that State as a builder of canals and highways. Stephen Vail, an uncle of Theodore Newton Vail, founded the Speedwell Iron Works near Morristown, N. J, where was built the machinery for the first steamship which crossed the Atlantic Ocean. At these works Samuel F. B. Morse perfected and first operated the magnetic telegraph. Stephen Vail and his sons supplied Morse with money and Alfred Vail built the first telegraph instruments and also invented the dot-and-dash alphabet, known as the Morse code.

Davis Vail, father of Theodore Newton Vail, was born in Ohio, but at an early age went to New Jersey and became connected with the Speedwell Iron Works. He married there and afterward went back to Ohio for a few years, during which time his son Theodore was born. When the boy was about four years old the family returned to New Jersey, where they stayed until 1866, later moving to Iowa, where his father became a farmer on a large scale.

On his mother's side Mr. Vail is connected with the prominent Quinby family of Morris County, New Jersey, his mother being a daughter of Judge Isaac Quinby and a sister of General Quinby, distinguished as a mathematician and a general of the Civil War.

Theodore Newton Vail received a thorough education in the old academy at Morristown, New Jersey, and after leaving school read medicine for two years with his uncle, Dr. William Quinby. During that time he acquired a working knowledge of telegraphy in a local office, and when the family migrated to Iowa he went with them. Ambitious to strike out for himself, in about a year he got a position with the Union Pacific Railroad and became an agent and telegraph-operator at a small station on that line. In 1869, through the friendship of General Grenville M. Dodge, Chief Engineer of the Union Pacific, he was appointed clerk in the railway mail service, where his ability to systematize and organize was soon felt. At that time the railway mail service was in a very crude state, and Mr. Vail prepared special studies on the question of distribution and dispatching of the mail which brought him quick recognition from the authorities at Washington, and he was summoned to the capital and appointed Assistant Superintendent of the railway mail service under George I. Bangs. Thereafter he took a leading part in the development of the fast railway mail service.

In 1876 he was appointed General Superintendent, although at that time he was the youngest of the officers in the railway mail service. Following in the footsteps of his predecessor, he strengthened the Civil Service system and developed the railway mail service of the country into a state of efficiency.

In 1878 he was approached by Gardiner G. Hubbard, father-in-law of Alexander Graham Bell, and offered the position of General Manager of the American Bell Company, a company formed to exploit the telephone, a recent invention. Mr. Hubbard had become acquainted with the executive ability of Mr. Vail, and had decided that he was just the man to take hold of the new invention and to organize and develop the telephone business on the large scale which its promoters saw would

Theo. N. Vail

be necessary when the world had become educated to the possibilities of the service.

Realizing that he had reached the limit of advancement in the railway mail service and having become intensely interested in the telephone itself, with a firm faith in its future, Mr. Vail accepted the position and immediately set himself to the task before him. He found many obstacles in the way, all of which were overcome. It was at first believed that the telephone was only good for local service, but Mr. Vail, with a larger conception of its utility, had visions of long-distance telephony far in advance of any one else, and one of his first achievements was to establish a long-distance line between Providence and Boston, and, upon his initiative, improvements were made in telephone equipment and material, so that little by little the obstacles were overcome and long-distance telephony extended until to-day New York talks to San Francisco.

In 1885 Mr. Vail resigned as General Manager of the American Bell Telephone Company and was elected first President of the American Telephone & Telegraph Company, resigning in 1887. In 1890 he resigned from the presidency of the Metropolitan Telephone & Telegraph Company of New York.

After retiring from active telephone work he purchased a large farm in Vermont, which he called the Speedwell Farms, and settled down to the raising of French coach horses, Welsh ponies, Jersey cattle, and Shropshire and Dorset horned sheep.

He spent some years abroad, and in 1893 made a trip to South America, where he became much interested in the Argentine Republic, and, obtaining a government concession near Cordoba, he built an electric power station. He also bought a horse-car line in Buenos Ayres, converted it into a trolley line, organized a company and equipped it with the best cars from the United States, bought out all competing lines, and gave the city a complete service. A company was organized, composed of British capitalists, who operated the road, and for some time Mr. Vail had his headquarters in London; but finally, believing that the undertaking no longer needed his personal attention, he retired from the company activities in 1904 and returned to his farm at Lyndon, Vermont.

In 1907, urged by prominent officials of the Bell Telephone Company, he re-entered the telephone field and again took the presidency of the American Telephone & Telegraph Company.

In 1910, the American Telephone & Telegraph Company, having acquired a controlling stock interest in the Western Union Telegraph Company, Mr. Vail became its President and proceeded to reorganize the company along the lines which he had so successfully applied to the telephone business, greatly increasing its gross revenue, rehabilitating its equipment, and giving to the public new and improved service.

On April 15, 1914, the American Telephone & Telegraph Company, having disposed of its interests in the Western Union by agreement with the Government, Mr. Vail resigned the presidency of the company and retired from the board of directors. Besides being President of the American Telephone & Telegraph Company, Mr. Vail is director in many of its subsidiaries, and also of the Bell Telephone Company of Canada.

He is a director of the Astor Trust Company of New York; a trustee of the American Surety Company of New York; President and a director of the New England Casualty Company; President and a director of the Lyndonville National Bank and of the Lyndonville Creamery Association, and many other corporations.

Besides his business activities, Mr. Vail has founded the Lyndon Agricultural School at Lyndon, Vt., in which he takes a keen interest. He is also a trustee of the Boston Museum of Fine Arts and a director of the Boston Opera House.

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UNION N. BETHELL

Union Noble Bethell, President of the New York Telephone Company, was born in Newburgh, Indiana, on September 12, 1859. He was graduated from Hanover College in 1879 and later received the degree of A.M. from that institution.

In a recent interview Mr. Bethell said: "Find out what you are fitted for, then go at it with all the energy in your nature. It took me ten years to find out what I really wanted to do, but since then there hasn't been any trouble. Have more irons in the fire than one, but be sure which is your favorite and stick to it with the greatest determination."

While he was heating irons and finding out just what he most wanted to do, Mr. Bethell was acting as Deputy Auditor of Warrick County, Indiana, and studying law at night. He entered the Government service in 1881 and received his legal degree in 1885. He was admitted to practice in the District of Columbia and in Indiana and later in the Supreme Court of the United States.

As a special agent of the Government he spent two or three years in the West, and there he became interested in the telephone, which was then in the early stages of development. He decided that he had found what he was looking for.

He came East, and in 1889 began his telephone career with the New York & New Jersey Telephone Company in Brooklyn. In a short time he was elected Secretary and Treasurer of that company, and in 1893 he was made General Manager of the New York Telephone Company.

The telephone had grown to a mechanical adequacy with which its organization had not kept pace, and it was in the fields of organization that Mr. Bethell's genius found its outlet. He discovered that there was very little co-operation between the mass of telephone workers, whose functions frequently overlapped, and his first series of "General Instructions" aimed to remedy this defect. He planned definite work for those under him and inspired his subordinates with the all-important idea of teamwork. Then when he had whipped his organization into shape he went out after business. There were fewer than 10,000 telephones in New York in 1893 and the rates were high. Mr. Bethell soon disabused the minds of both the public and his employees of the idea that the telephone was a luxury for the wealthy. He democratized the telephone in New York. Under his direction the number of pay-stations was doubled and the rates steadily cut. Small users were welcomed. There were more than twenty-one thousand telephones in the Greater City by 1897. There were 190,000 in 1905, and in 1908 there were 310,000. During 1906, sixty-five thousand telephones were put in.

U. N. Bethell

In the meantime, Mr. Bethell's responsibilities were steadily growing. In 1901 he was made President of the Bell Company operating in Washington, Baltimore, and surrounding territory and later he became President of the company operating in Philadelphia and Eastern Pennsylvania. By successive steps he assumed the management of the Bell companies operating throughout New York State, New Jersey, Pennsylvania, Delaware, and Maryland.

In 1909, with Mr. Bethell at their head, these companies were formed into an operating unit covering a territory of about 125,000 square miles, from Washington on the south to Pittsburgh on the west, New York on the east, and the Canadian border on the north.

In 1910 Mr. Bethell was made Vice-President of the American Telephone & Telegraph Company and is now Senior Vice-President of that company as well as President of the New York Telephone Company, which operates 1,033,490 telephones.

Mr. Bethell has made exhaustive studies of the telephone abroad, and is generally acknowledged to be one of the world's authorities on all that pertains to questions of telephone policy and finance and details of telephone management. In 1909 Mr. Bethell received the Order of the Rising Sun from the Emperor of Japan for his services to science.

Mr. Bethell was married in 1893 to Miss Donna I. Brink and has three sons. He lives at Upper Montclair, N. J.

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JOHN J. CARTY

One of the most important figures in the development of the art of telephony is John J. Carty, Chief Engineer of the American Telephone & Telegraph Company, known to-day throughout the world as the greatest of telephone engineers, and as the engineer of the longest telephone line in the world—the great Transcontinental.

Mr. Carty was born in Cambridge, Mass., April 14, 1861, and was endowed by nature with the essential elements for success in the telephone business—a clear, keen mind, a natural liking for mechanical experimentation, and an infinite capacity for work, to which was added a good education. He was graduated from the Cambridge Latin School with the intention of entering Harvard University, but a serious trouble with his eyesight forbade further immediate application to his books. A natural aptitude for mechanics and a leaning toward scientific investigation attracted him to the telephone business. In this business he has made an enviable name for himself during his thirty-six years' connection with it. When he began there were no text-books to go by, and he had to join the band of pioneers blazing their way by tedious experimentation. There was no such thing as an electrical engineer, and much of what to-day represents the basis of telephone engineering is founded on what such men as he evolved from the hard school of experience.

His first employment was in 1879, with the old Telephone Dispatch Company of Boston, where he made a number of interesting contributions to the art of telephony—contributions that were of unusual value and that since have become permanent features of the art. Under his direction was installed at Boston the first multiple switchboard, which was at that time the largest ever put into use. For the "express" telephone system he designed and installed the first metallic circuit multiple switchboard to go into service. Some of the fundamental features of this board are in all of the boards of to-day.

In 1887 Mr. Carty took charge of the cable department of the Western Electric Company in the East, with headquarters at New York. In this capacity he studied cable manufacture and laying, and introduced a number of improvements, having charge of all of the important cable-laying projects which were carried on for some time in the Eastern cities. He then took charge of the switchboard department of the Western Electric Company for the East, and under his direction were installed most of the large switchboards of that period, among which was the original Cortlandt Street multiple board. During this time he made a number of important improvements in switchboards which have since become standard practice.

He was the first to demonstrate practically how to operate two or more telephone circuits connected directly with a "common battery," and about 1888 installed common battery systems in a number of central offices for the supply of operators' telephones. From these early experiments have grown the standard common battery systems now generally employed.

Although charged with serious practical engineering problems, Mr. Carty has found time to follow to some extent his strong natural inclination for original research. He made an exhaustive investiga-

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J. J. Carty

tion into the nature of the disturbances to which telephone lines are subjected, and gave the first public account of his work in a paper entitled "A New View of Telephone Induction," read before the Electric Club on November 21, 1889. The view put forth in the paper was revolutionary, but nevertheless, after being checked by numbers of experimenters in this country and Europe, received universal acceptance, and is the one now adopted in all works dealing with the subject. In this paper he showed the overwhelming preponderance of electrostatic induction as a factor of producing cross-talk, and proved that there is in a telephone line a particular point in the circuit at which, if a telephone is inserted, no cross-talk can be heard. The paper also gave directions for determining this silent or neutral point, and described original experiments showing how to distinguish between the electrostatic and electromagnetic induction in telephone lines.

On March 17, 1891, Mr. Carty made additional contributions to the knowledge of this subject in a paper before the American Institute of Electrical Engineers entitled "Inductive Disturbances in Telephone Circuits." This paper might better have been called "The Theory of Transpositions," because in it was made known for the first time precisely why it is that twisting and transposing telephone lines render them free from inductive disturbances.

In 1889 he entered the service of the Metropolitan Telephone & Telegraph Company, now the New York Telephone Company, for the purpose of organizing all of the technical departments, building up its staff, and reconstructing the entire plant of the company—converting it from grounded circuits overhead and series switchboards to metallic circuits placed underground, and to the then new bridging switchboards. In carrying out this work he selected and trained a large staff of young men fresh from college, many of whom have since attained positions of prominence in the telephone field. In the development of the personnel of his department, Mr. Carty has taken a particular pride, looking to the welfare of those already engaged, and, through his touch with prominent technical educators, adding each year to this staff from the graduating classes of our principal technical schools.

Under Mr. Carty also the reconstruction of the New York Telephone Company's plant was carried out the second time, converting it from cables and switchboards of the old type to modern cables and the common battery switchboard, and providing for the extraordinary extensions which to-day constitute the comprehensive telephone system of New York. In 1906 Mr. Carty delivered an important paper on "Telephone Engineering" before the American Institute of Electrical Engineers.

Mr. Carty was appointed Chief Engineer of the American Telephone & Telegraph Company in 1907, immediately after Mr. Vail became President of the Company. In that position he was responsible for the engineering work of the Bell System, and under his direction most important developments have been carried to a successful completion in all phases of both plant and traffic engineering. At the present time it is most pertinent to mention a few of the advances made by Mr. Carty toward the complete realization of universal service in the Bell System.

By far the longest underground telephone cable in the world has been designed, manufactured, laid, and placed in operation connecting Boston, Mass., with New York, and with Washington, D. C., and through this cable successful underground telephone communication over the 450 miles is daily realized.

The telephone lines and the apparatus used with them, connecting New York City with the West, have been improved and extended until, about the first of 1912, telephone conversation was possible over a distance of 2,100 miles, from Denver, Colo., to New York City. This in itself was a most notable achievement, the line from New York to Denver being then by far the longest telephone line in the world, and created wonder and admiration among telephone engineers not only in this country, but in Europe and elsewhere throughout the world. But the genius of Mr. Carty was not satisfied with this—nothing less than a telephone line that would talk the length and breadth of the United States would satisfy this Napoleon of the telephone engineering world. Immediately after the completion of the Denver circuits, engineering investigations and development work were started by Mr. Carty, the results of which were demonstrated on the 25th of January, 1915, when the formal celebration of the completion of the Transcontinental telephone circuits from San Francisco on the West to New York and Boston on the East was held in the presence of most distinguished gatherings in these cities.

By invitation of the French Government he became a member of the International Telephone and Telegraph Conference at the Sorbonne, Paris, in 1910, where he delivered a notable address, "Telephone Service in America." He was also invited to become a member of the International Telephone and Telegraph Conference at Berne, in 1914, but this conference was postponed on account of the war.

Mr. Carty has been granted a number of

Order of the Sacred Treasure — Order of the Rising Sun

Decorations Conferred Upon J. J. Carty, Chief Engineer, American Telephone & Telegraph Co., by the Emperor of Japan

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patents, some of them fundamental in their character, of which perhaps the most important is that known as the Carty bridging-bell patent. No more sudden and complete revolution in any part of the telephone art can be found than that which followed his address at the Detroit Telephone Convention in 1890 on the subject of bridging bells. From the day the address was delivered telephone engineers throughout the country began the work of removing series bells and replacing them with those of the bridging type. The improvement which this wrought in telephone service in party lines has not been exceeded by any other single advance in the art.

The Franklin Institute of Philadelphia, after an investigation by its Committee on Science and Arts, in this matter of the bridging bells, awarded Mr. Carty the Edward Longstreth Medal of Merit for his engineering work. For his services in connection with the original establishment and subsequent development of the telephone system of Japan, Mr. Carty has twice received the formal thanks of the Japanese Imperial Government, and, by direction of the Minister of State, valuable specimens of Japanese art, consisting of rare cloisonné, were presented to him. He was decorated by the Emperor of Japan in 1909, with the Imperial Order of the Rising Sun, and again in 1912, with the Imperial Order of the Sacred Treasure of the Meiji.

Mr. Carty is a Fellow of the American Institute of Electrical Engineers, and was formerly one of its Vice-Presidents. He is a past President of the New York Electrical Society, a member of the Franklin Institute of Philadelphia and of the American Society for the Advancement of Science, an honorary member of the Telephone Society of New York, and an honorary member of the Telephone Employees' Association of New England. He is also a member of the Society of Arts, and an honorary member of the American Electro-Therapeutic Society, to which position he was elected in recognition of his valuable work in the direction of more rational methods in the use of electrical currents in medicine. Mr. Carty is a member of the Engineers' Club of New York, the New York Electrical Society, and the Telephone Pioneers of America.

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BANCROFT GHERARDI

Bancroft Gherardi, Engineer of Plant of the American Telephone & Telegraph Company, was born in San Francisco, California, April 6, 1873. He was graduated from the Polytechnic Institute of Brooklyn in 1891 with the degree of B.S., after which he went to Cornell, where he received the degree of M.E. in 1893 and M.M.E. in 1894.

In February, 1895, he began his telephone engineering work in the office of Mr. J. J. Carty, then Engineer of the Metropolitan Telephone & Telegraph Company, the predecessor of the New York Telephone Company. His earliest work was the inspection and testing of cables, so at the very start he became familiar with the state of the art in regard to this important part of the telephone plant. After doing this and other general work for some time, he was placed by Mr. Carty in charge of the material-inspection work of the company. Later, when it became necessary to prepare a new fundamental plan for New York, this work was placed under his charge, and he directed the preparation of a fundamental plan for 100,000 lines within the area of Manhattan and the Bronx. This figure of 100,000 lines then seemed so large that some doubted whether the plan was one resting on any but a fantastic foundation. This was in 1898. However, in 1907, only nine years later, these 100,000 lines were attained, and before that time much larger plans were prepared and are now outgrown.

In the fall of 1900 Mr. Gherardi was transferred to the Traffic Department of the New York Telephone Company. He there reported to Mr. E. F. Sherwood, Superintendent of Traffic, and under his direction and that of Mr. Carty, created the first Traffic Engineering Department of any operating company, a department now recognized as such an important part of the administration of a successful telephone company.

On January 1, 1901, Mr. Gherardi was appointed Chief Engineer of the New York & New Jersey Telephone Company, then operating as a separate company, although intimately associated with the New York Telephone Company because of its proximity, similarity of conditions, and large interchange of business. His close connection, both professional and personal, with Mr. Carty, the Chief Engineer of the New York Telephone Company, and with the other officials of that company, enabled him to bring the engineering of the New York & New Jersey Telephone Company into the closest and most harmonious relations with that of the New York Company.

The first important work which confronted him was the preparation of fundamental plans for Brooklyn and other large cities in the company's territory, and immediately following these, and based thereon, was the conversion of the plant to a common battery basis. Soon after his appointment to the New York & New Jersey Company, loading was invented, and it was decided to place a loaded cable between New York and Newark. This cable was the first commercial application of cable-loading to a working telephone plant, and in connection therewith many questions came up requiring solution. This cable was successful and was immediately followed by a very rapid extension of loading throughout the territory.

Bancroft Gherardi

In March, 1906, the operating organizations of the New York Company and the New York & New Jersey Company were consolidated, and at that time Mr. Gherardi became Assistant Chief Engineer of both companies, reporting once more to his old chief, Mr. Carty.

In May, 1907, when Mr. Vail became President of the American Telephone & Telegraph Company, he appointed Mr. Carty to the position of Chief Engineer of that company, and in connection with the reorganization of the engineering forces, Mr. Gherardi was appointed Equipment Engineer of the American Telephone & Telegraph Company, and in 1909 was appointed Plant Engineer of that company, in charge of all plant development and standardizing for the Bell System.

He has had his part in connection with the subway and cable from Boston to Washington, the lines from New York to Denver, and later the Transcontinental line, to say nothing of a multitude of problems in regard to switchboards, subways, cables, open-wire lines, substation instruments, transmitters, receivers, cross-talk, inductive interference, and every other question pertaining to the largest telephone plant in the world.

Mr. Gherardi was particularly fortunate in working at the start and throughout his whole career under the direction of and in close association with Mr. Carty, who is universally recognized as the leading telephone engineer of the world. No one knows better than Mr. Gherardi that it is both a scientific and liberal education to work for Mr. Carty.

For many years he has been connected with the American Institute of Electrical Engineers, and has taken a prominent part in its affairs. In addition to presenting a number of papers and taking part in discussions, he held the position of Manager of the Institute for three years and for two years was one of its Vice-Presidents. Last year he was again elected to the Board of Directors as a Manager, a position which he now holds. In the Telephone Society of New York he has occupied many positions, including that of President, and has presented a number of papers.

In June, 1898, Mr. Gherardi married Miss Mary Hornblower Butler. Mr. and Mrs. Gherardi reside at Bayhead, N. J., but spend their winters in New York City.

The name Gherardi appears in the histories of two most important steps in the development of electrical communication.

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Gold Medal Presented to Lieut. Gherardi, Father of Bancroft Gherardi of the A. T. & T. Co., in Commemoration of Services Rendered in the Laying of the First Transatlantic Cable

Some fifty years before Bancroft Gherardi, Plant Engineer of the American Telephone & Telegraph Company, had an active part in the completion of the first transcontinental telephone line, his father was prominent in the laying of the first Atlantic cable.

The first attempt to lay a cable under the Atlantic was in 1857. The wire which was paid out from the stern of the laying ship broke and 500 miles of it were lost. In July of the following year a second expedition was sent out. On July 28, in mid-ocean, the naval ships *Niagara* and *Agamemnon*, each carrying half the cable wire, spliced the ends and started off in opposite directions. Lieut. Gherardi, Engineer Gherardi's father, who was later to become Rear-Admiral, was senior watch-officer aboard the *Niagara*. The *Niagara* headed west for the spot chosen as the terminus at Trinity Bay, Newfoundland. She arrived there on August 5, and Lieut. Gherardi was sent off in charge of the small boat that landed the cable. For his share in this historic achievement Lieut. Gherardi was awarded the medal shown in the cut. That medal is one of the most treasured possessions of the head of the Plant Engineering of the Bell System. It is a notable coincidence that the younger Gherardi is now doing his part in connection with another epoch-making event—the spanning of the continent with a telephone-line by far the longest in the world and connecting San Francisco, his birthplace, on the Pacific coast, with New York, his present home, on the Atlantic seaboard.

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DR. MICHAEL IDVORSKY PUPIN

It is timely that in this issue of THE TELEPHONE REVIEW we should print a portrait of Michael Idvorsky Pupin, the distinguished professor of Columbia University.

Dr. Pupin is so well and favorably known to us that we like to regard him as a member of the great Bell family. To print an account of his titles and distinctions would require columns, but this brief list will suffice for our readers who are so well acquainted with his delightful personality and so conscious of his eminent standing among the shining lights of the art of telephony.

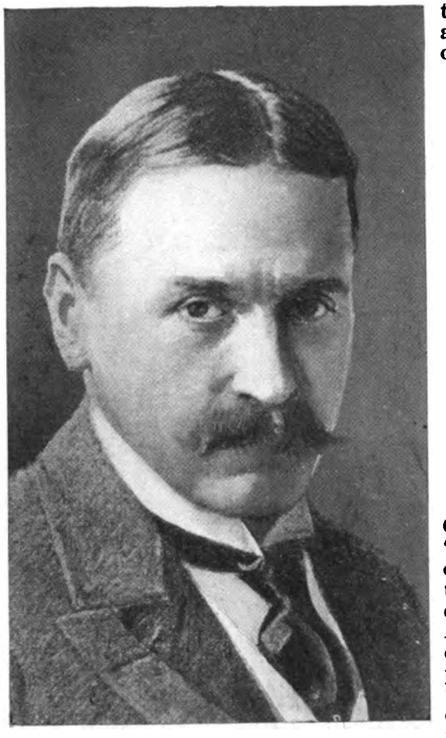
He was graduated from Columbia University in 1883 with the degree of Bachelor of Arts. He received the degree Doctor of Philosophy from the University of Berlin in 1889, and the degree of Doctor of Science from Columbia University in 1904.

He is a fellow of the American Association for the Advancement of Science, the New York Academy of Sciences, a member of the National Academy of Sciences, American Philosophical Society, American Physical Society, American Mathematical Society, American Institute of Electrical Engineers, and is a well-known contributor to many scientific and technical journals.

Throughout the entire length of the Transcontinental Line through which the talking between the Atlantic and the Pacific was first done, there are at intervals of about eight miles hundreds of Pupin loading coils spaced according to the rule which was the outcome of his extraordinary genius and marvelous knowledge of physical laws.

Dr. Pupin's invention, which was purchased by the Bell Company for a large sum of money, has been described so often and is so technical in its nature that no attempt will be made here to describe its remarkable electrical and physical characteristics.

While all the world already knows of the great importance of Dr. Pupin's invention, it is with peculiar pleasure that we are now printing his portrait and these few words as a slight tribute to his genius and as a remembrance of his great and enduring contribution to the art of transmission just now so brilliantly exemplified.

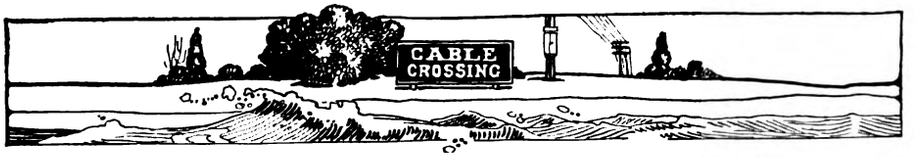


Dr. Michael Idvorsky Pupin

Dr. Pupin is Honorary Representative of the Servian Government in the United States, and his patriotic labors on behalf of his struggling countrymen are so continuous and self-sacrificing that he was not able to be present with us at the formal opening.

A Dream That Came True

Some dreams do come true. Alexander Graham Bell was called an "impostor," a "ventriloquist," and "a crank who says he can talk through a wire," when he invented the telephone which English newspapers called "the latest American humbug." And yet Bell was one of the advance-guard of civilization and progress, for with the prophetic vision of a dreamer he wrote in 1878: "It is possible to connect every man's house, office, or factory with a central station, so as to give him direct communication with his neighbors. . . . It is conceivable that cables of telephone-wires could be laid underground, or suspended overhead, connecting by branch wires with private dwellings, shops, etc., and uniting them through the main cable with a central office."



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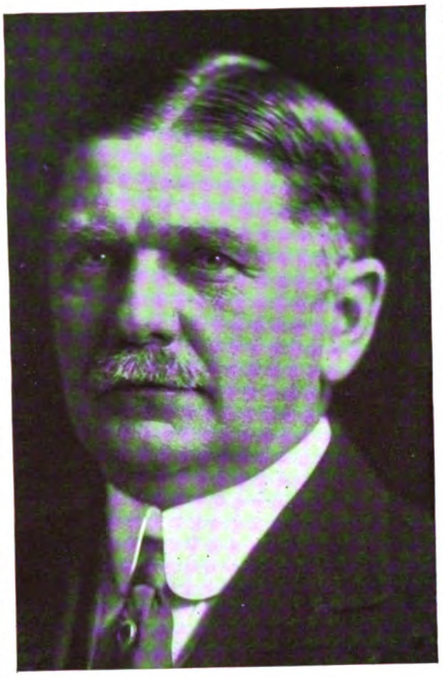
C. E. SCRIBNER

Charles Ezra Scribner, Chief Engineer of the Western Electric Company, the manufacturing organization of the Bell System, is the third man in the electrical field in the United States in the number of electrical patents issued. Mr. Scribner has taken out between 400 and 500 United States patents and has between 600 and 700 applications on file. His principal inventions have been telephone apparatus, although when he first turned his attention to things electrical he patented numerous electrical devices such as dynamos and arc lights.

He has made many important contributions to the art of telephony, particularly in the development of switchboard, the "nerve center" of the telephone system. All other telephone apparatus also shows the imprint of his work.

Mr. Scribner was born at Mt. Vernon, Ohio, February 16, 1858, the son of Charles Harvey and Mary Elizabeth (Morehouse) Scribner. He was educated in the schools of Toledo, Ohio. He was only 18 when he went to the Chicago factory of the Western Electric Manufacturing Company to show a model of a telegraph repeater he had made. There he met Enos M. Barton, the head of the organization, and through the latter's influence became an inspector of printing-telegraph apparatus in a local telegraph company. Shortly afterward he entered the laboratory of the Western Electric Manufacturing Company, and at that moment he began a career as an investigator and inventor that has brought him international fame, and Mr. Scribner, still a young man, has seen the results of his research and development work bear splendid fruit in the present telephone system of the country.



C. E. Scribner

The Western Electric Manufacturing Company dropped the word "Manufacturing" from its name in 1882. Mr. Scribner remained at the Chicago factory until 1908, when he became connected with the New York office as Chief Engineer in charge of development and experimental work.

Mr. Scribner is a Fellow of the American Institute of Electrical Engineers, and in 1913 was a director and vice-president of the organization. He is a trustee of the United Engineering Society. His work in the electrical field was recognized at the Paris Exposition of 1900 by the award of a gold medal.

Mr. Scribner's clubs include the Machinery Club and the Engineers' Club of New York; the Ethan Allen Club and the Waubanakee Golf Club, both of Burlington, Vermont.

On December 1, 1880, he married Miss Marietta Margaret Brown, of Toledo, Ohio. His home is at 258 Riverside Drive, New York.

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FRANK B. JEWETT

Dr. Frank B. Jewett, Assistant Chief Engineer of the Western Electric Company, has had a large share in solving the problems of transmission that have been created as telephony has been developed to the extent where transcontinental telephone talk could be made possible. For nearly eight years he was in the Engineering Department of the American Telephone & Telegraph Company, and in that period had charge of all transmission development work for the Bell System.

While Dr. Jewett was Transmission Engineer for the American Telephone & Telegraph Company the loading of eight-gauge circuits was perfected; phantom cables and phantom loading for open wires and cables were developed; the New York to Denver circuit and line was engineered and also the Boston to Washington underground cable. Dr. Jewett began work on the transcontinental line, retaining general charge of the transmission engineering until the line was completed.

Frank B. Jewett was born in Pasadena, California, September 5, 1879. He graduated from Throop Polytechnical Institute of Pasadena in 1898 with the degree of A.B. in electrical engineering. From 1898 until June, 1902, he was a student in the University of Chicago, receiving the degree of Ph.D. in 1902. From 1901 until June, 1902, he was research assistant to Professor Michelson, of the Department of Physics. From 1902 to 1904 Dr. Jewett was instructor in physics and electrical engineering at the Massachusetts Institute of Technology.

Frank B. Jewett

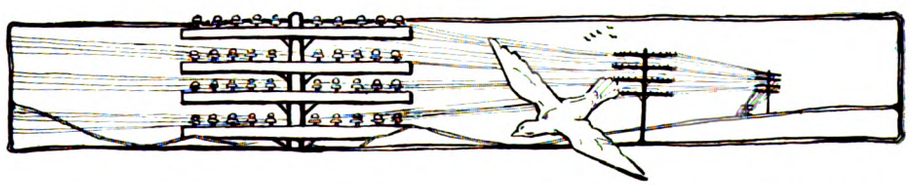
Dr. Jewett became connected with the American Telephone & Telegraph Company in September, 1904, remaining until April, 1912, when he became Assistant Chief Engineer of the Western Electric Company, having charge of all development and research work.

Dr. Jewett is a Fellow of the American Institute of Electrical Engineers' and is Chairman of the Telephone and Telegraph Section of the Standards Committee of the Institute. He is also a member of the Society for the Advancement of Engineering Education, and President of the Telephone Society of New York. His clubs include the Machinery, Engineers', and Technology Clubs of New York and the University Club of Chicago. He is a member of Delta Upsilon fraternity.

Dr. Jewett has written numerous papers on various scientific subjects for the *Philosophic Magazine* and the *Physical Review*, and he has presented papers before the American Institute of Electrical Engineers.

In 1911 he presented a paper on "Long Distance Telephony in America" before the International Electrical Congress at Turin, Italy.

On December 28, 1905, he married Miss Fannie C. Frisbie, of Rockland, Ill.



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ANNIHILATING SPACE

Five Months One Way Reduced to One Second Round Trip

NEW YORK TO SAN FRANCISCO

A Prairie Schooner, 1849—New York to San Francisco in Five Months

1849

Hot, radiant, yellow sand, stretching out interminably toward purple mountains. Air, hot as the sands, stifling, muddy with powdery dust. Set squarely in the midst of this vast and lonely wilderness, a drab, cloth-covered prairie schooner crawling, like some immense insect, toward the Land of Gold.

Five months of longing, hoping, monotonous turning of dry and crusted wheels. The tired little mother with babe in arms pulled back the canvas flaps and looked out. Far, far ahead, at the end of the wide trail of sand and bleached bones, lay the great West, as in a mystic dream. Five months—and when the hills, their running streams and low-hanging wet clouds at last came into view, the journey did not seem so long, after all. . . . only five months from New York to 'Frisco.

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1859

Stinging, salt spray blew in the faces of the more sturdy who crowded far forward in the gray of dawn. "Roundin' th' Horn," a deep voice boomed aft from the drifts of mist and fog, and, as if to challenge these venturesome ones who had found a shorter route to the Gold Coast, the snarling sea cracked over the creaking decks and the whole, little universe of spars and sails and brave masts—and men, ran salty with the sea. Treachery of wind and wave and rocky coast marked these storm-bound miles, but it was worth the dare. "Three months to 'Frisco's opal bay" and the quiet of a prosperous harbor. Who ever heard of such time before? Indeed, man was moving apace. And clipper ships in plenty swung around the Horn, fair weather and foul, vying with one another to shorten this latest travel record.

Rounding the Horn, 1859—New York to San Francisco in Three Months

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1869

The musty records of railroading and human progress make almost sacred reference to the first Union Pacific engine that worked its panting, fretful, cindery way over mile upon mile of yellow lands, until it drew its thread of cars up into the mystery of the western hills.

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It was on the lips of every one in those days—you heard it in Old New York within a stone's throw of affable taverns and Bowling Green—you heard it as far across the continent as the Catalinas—"'Frisco in twenty days!" they were saying. The sheer wonder of it! Who could ever have dreamed of such a thing? Man was outstripping himself in his new, seven-league boots of steel. And all the while the first, brave little Union Pacific engine was whittling fame for itself out of the grim majesty of the Rockies.

◈ ◈ ◈

1914

We are proud of our Great Achievement; our hands reached out to pat the backs of those mud-spattered men in yellow khaki when they closed the doors of the innumerable little rain-soaked shanties of the tropics upon their blue-prints and fever and hopes and disappointments, and called to us that our Panama Canal was ready. Another vista opened up with the rising of another sun—"Sixteen Days to 'Frisco, via the Canal." And a nation—a score of nations stopped their labors for a moment and looked on with respect as Old Glory went rippling up to the top of a gleaming mast and the first steamship eased its way into the chocolate waters of Culebra Cut.

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"Sixteen days from New York to San Francisco." It seemed incredible, and across the broad waters they whispered to

Across the Continent by Rail, 1869—New York to San Francisco in Twenty Days

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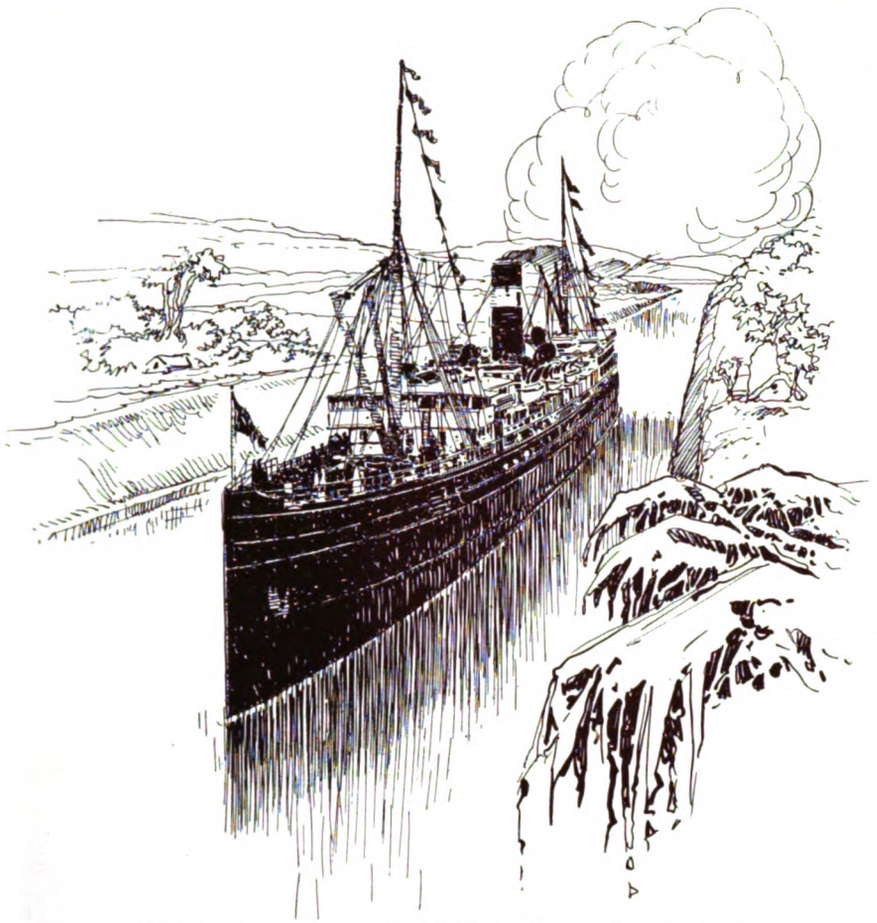

Via the Panama Canal, 1914—New York to San Francisco in Sixteen Days

one another of wonderful Yankee speed. The shiny, green festoons of foliage, mast high along the Cut and the queer little thatched houses peered down from the conquered heights of Gatun as the steamer cut a continent in two.

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1915

It was on the observation platform of the Overland Limited, bound from New York to 'Frisco. Two men smoked their cigars in silence for some time. Suddenly one of the two spoke: "By Jove, they're getting things down pretty fine when you can get across in four days. Doesn't seem like any distance. Why, it was only yesterday, it seems to me, that they were glad to make it in five months in a prairie schooner, without mishap."

"Yes," the other remarked reflectively, "pretty fast and progressive age—but they've reached their limit. These four days of rail and buffet cars and sleepy porters still separate a business man from lots of opportunity."

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1915

The business man's lament is answered. From New York to San Francisco is now a telephone trip of less than a second. You will soon be able to "call up" the Western city from your New York office. "Here's your party," the very pleasant voice of "Long Distance" will say as she opens up for you a pathway of wires straight across the continent—over the mountains and plains, through large cities and modest hamlets—past snow and rain and tropical sunshine. Every wire on this speediest of all speedways tingles with Opportunity.

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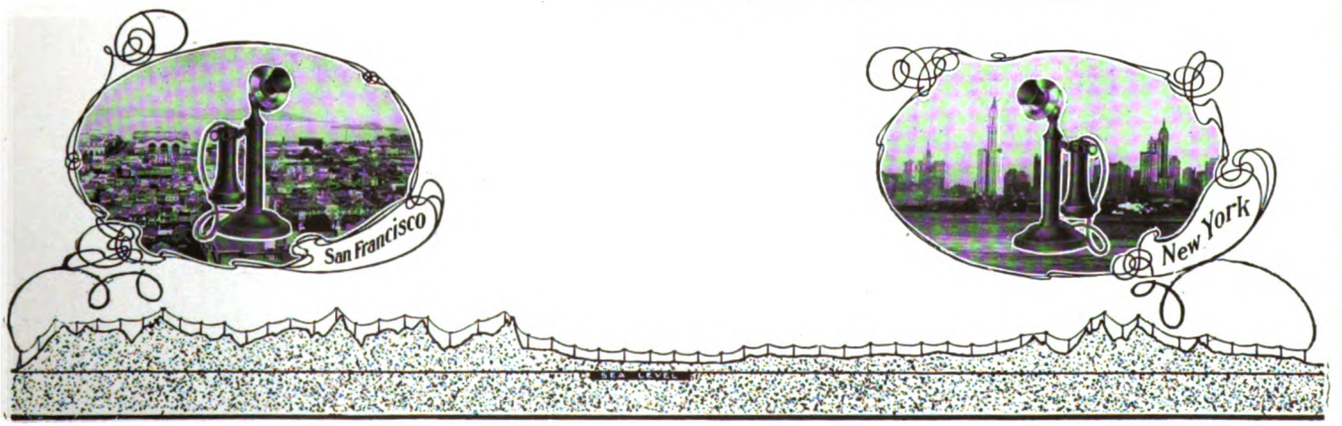
And the absolutely incongruous part of it is that your voice will arrive in 'Frisco just three hours before you call up, according to the local time out there on the coast. This is in reality "The Triumph of Science."

Overland Limited, 1915—New York to San Francisco in Four Days



The Transcontinental Voice Highway—New York to San Francisco in "Less than a Second"

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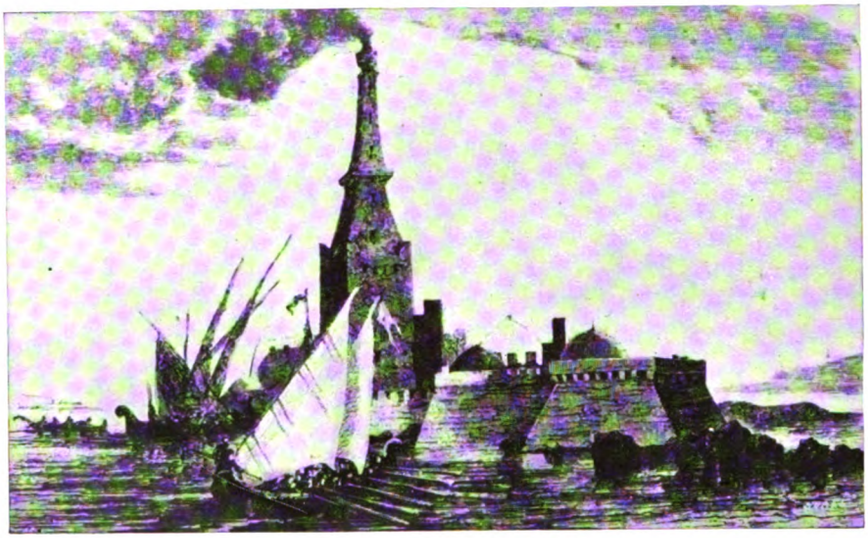
THE POWER OF PERSONALITY IN COMMUNICATION

REALIZED IN THE TRANSMISSION *of* SPEECH BY TELEPHONE

Historical Review of the Development of Communication, from Ancient to Modern Times

"Speech is one of our grand distinctions from the brute," wrote Channing, which only expressed in different words what Quintilian wrote centuries ago: "God . . . has impressed man with no character so proper to distinguish him from other animals as by the faculty of speech."



The Pharos of Alexandria, One of the Seven Wonders of the World, 3d Century B.C.

It might truly be said also that nothing distinguishes one man from another more than his speech.

Speech, therefore, may be termed the evidence of man's superiority in creation and of a man's superiority among men.

The purpose of speech is the communication of ideas. A witty Frenchman has said, "Speech was given to man to disguise his thoughts," but even if this be true there is an idea behind the disguise. Speech has determined the course of the world's history. Before "Adam dolve and Eve span," the whisperings of the serpent and the seductive pleadings of the woman caused humanity to labor for existence. It may not be irreverent to conjecture whether the course of the world would have been so ordered if these fatal communications had not been made by word of mouth—for example, if a messenger, a letter, a telegram, or even a wireless had been sent! At the Tower of Babel, the first gigantic engineering enterprise on record was abandoned uncompleted because, although speech was possible, the understanding was absent through the confusion of tongues, and the dispersion of the nation followed.

The communication of ideas by means of speech, therefore, has been dependent in all ages, first, upon the proximity of the speakers to their hearers, and, secondly, upon the use of a common language.

All ties of kinship and affection were broken with the severance of communication when people of the same race and language first went out to populate new parts of the earth, and there is a record of toilsome efforts, from the dawn of history until this day, to devise a means of communication which would be effective. All these efforts were directed toward supplying a symbol for the thing signified, providing a secondary instead of primary means of communication, a substitute for direct intercourse which distance made impossible.

Not until the success of Alexander Graham Bell's invention was the intermediary eliminated, and the human voice conveyed to the listening ear, with all its tones and modulations.

"Without knowing *the force* of words it is impossible to know men," wrote Confucius, and the force of words is in their utterance.

Charles James Fox, the famous English statesman and parliamentarian, was congratulated by a friend one day on a speech delivered the night before and printed in the *Times* that morning. Fox replied that if it read well it must have been a very poor speech.

Every one is hearing of the wonderful power of "Billy" Sunday in his revivals, but if you read one of his sermons you will wonder why the thousands who constitute his audiences night after night are worked up to the highest pitch of enthusiasm.

The power of words, then, is in their utterance, which means that they are powerless or powerful according to the personality behind them. The telephone alone of all means of communication conveys the words and the personality behind them. It gives our words and personality wings and they fly where we would have them go.

But this achievement has not been wrought in a day, and only against its background can it be fully appreciated.

The history of communication is the history of human progress. Hand in hand with the gradual development of intercourse, there has been growth in fulness of life. The fundamentally social nature of man has made this growth inevitable. Only through communication could the experience of one influence the action of another, and only through the interchange of the lessons of experience could the well-being of the race advance.

Communication is of two sorts—distant and near. Language early met the demands of the latter, but the development of long-distance communication has been slow.

In ancient Egyptian wall-paintings may be seen pictured the earliest method of distant communication—the messenger. Bearing the message on a roll of papyrus, the ambassador comes with great ceremony from the Queen of Kush to the Prince of Upper Egypt. The variations of communication by messenger were many. Runners were employed, and messengers on horseback were sent to outstrip them, if the opposing side was on the alert.

The beacon lights which told Greece the news of the fall of Troy; the shafts of the sun reflected from polished shields, seen after Marathon; the Pharos, one of the seven wonders of the world, a kind of lighthouse which sent "a light by night" and also "a cloud by day"—all these early methods of distant communication were limited in scope, often being misinterpreted. Attempts were made to transmit exact information by means of combinations of torches corresponding to letters, but these never reached any degree of perfection.

With the downfall of Rome and the influx of barbarians came the Dark Ages, when communication was extremely limited and the progress of civilization seemed at a standstill, but was in reality only storing up new vigor. The Bayeux tapestry, woven about 1100 A.D., shows William the Conqueror receiving news from a herald, and again, William setting fire to a hut as a signal to his troops that war is to begin; still the ancient methods of communication —the messenger and fiery signals. These,

Abb. 10. Absenden v. Brieftauben. Holzschn. a. Montevilla, Reise 1488.

Woodcut Showing the Use of Carrier Pigeons—Date 1488

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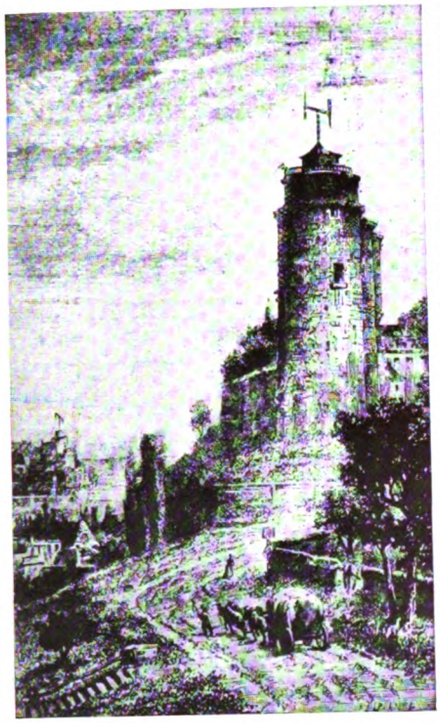


Two Chappe Signal Towers—1791

however, were supplemented in the Middle Ages by the use of carrier-pigeons. The Crusaders learned the value of pigeons as messengers from the Mohammedans, and after the Crusades pigeons were widely used in Europe.

Another slight step in advance was made in 1464, when a restricted postal system was developed by Louis XI. In many cases the letter-carriers used stilts to increase their speed.

By the middle of the fifteenth century, when Europe was lifting her head from her long nap, the invention of movable types came to hasten her awakening. The art of printing, that great stimulus of the Renaissance, has grown steadily in influence and power as a means of distant communication, until to-day it bears its tidings everywhere, slowly indeed, but in unlimited scope.

With the new interest in science which was a part of the Renaissance, Galileo's invention of the telescope opened the way for further development in transmitting messages by optical signals. Amatons, a French physician, attempted a system of signaling by flags and cross-bars on poles, the telescope being used in deciphering it. This was a forerunner of the flag-and-arm signal still in use. Another French inventor, Gauthey, tried to utilize the property of metals to transmit sound, by developing a system of metallic tubes. This was not successful at the time, but was the precursor of that fascinator of late-Victorian childhood, the speaking-tube.

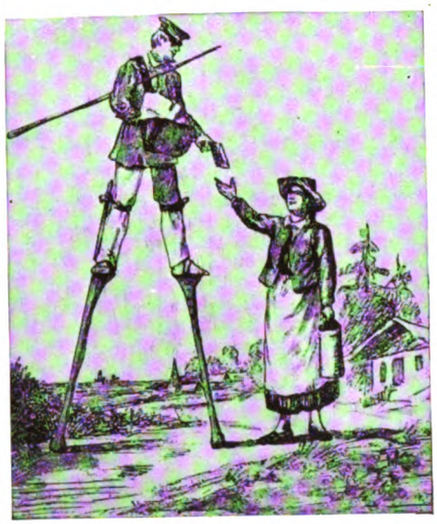
The Revolutionary War developed a rude system of signaling in this country. A pole with nothing on the top meant danger—this sign being used to avoid arousing the suspicion of the enemy. Commonplace objects like barrels, baskets, etc., were used to convey less ominous intelligence.

Claude Chappe, a French engineer, evolved a dial-system of signaling to be read by a telescope marked by a micrometer. Cross-arms were substituted for the dial and would have been immediately successful had not Chappe tried to introduce them in Paris in 1791. Probably there were already too many new ideas in Paris at that period; the seething currents of the Revolution engulfed the new invention and, although the Commune of Paris authorized Chappe to erect stations, the populace feared treachery and, lest the signals be used to communicate with the enemy, burned the stations. Later, however, the inventor's brother was elected to the Assembly and, a test being made in which a message was sent 35 kilometers and acknowledged within 11 minutes, Chappe's system was adopted. Carlyle describes with his characteristic vividness "wooden arms with elbow joints jerking and fugling in the air in the most rapid mysterious fashion"—the system which most nearly did the work of the yet unknown telegraph.

Flag-signaling, used since the Middle Ages, has developed a comprehensive code and is still used in the navies of the world. Bugling is another method of signaling, still employed in military operations and effective where the distance is comparatively short.

One great difficulty of all sound-signaling thus far has been its short range, and of all optical signals the necessity for clear weather. It was left to electricity to solve these two great difficulties, in the telegraph, which still left unrevealed the greater secret of complete distant communication. But electricity with its undreamed powers was in its infancy when it touched the telegraph to life. The greatness of its hidden might was yet untested.

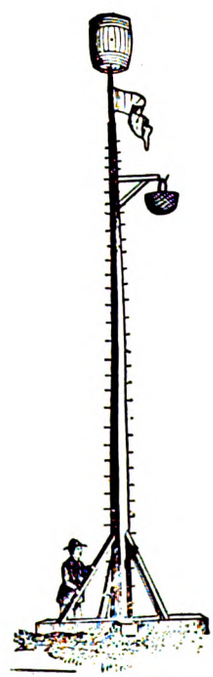
What, then, is the great secret of distant intercourse, which the ages of civilization had been powerless to track to its illusive hiding-place? Is not the answer to be found in the nature and purpose of com-



Medieval Mail Carrier Increasing Speed by the Use of Stilts 1464

munication itself? The interchange of ideas is the soul of communication. Marvelous as is the development of means of communication and its relation to human progress, it is not the means employed that is essential, but the communication itself. At the Tower of Babel the means of communication were adequate—organs of speech were in perfect order and no distance intervened, but the people were helpless because they could not make one another understand. The bodily presence of two individuals in one place would, therefore, be worth nothing if speech did not permit the interplay of their ideas; it is the coming together of personalities, not corporeal presence, which is essential. The means of intercourse are important simply as they are used and as they develop and stimulate intercourse. The interchange of ideas is itself the educator of mankind, and in so far as historic means of communication have promoted that, they have contributed their great impulse to the increasing fulness of human living. But they have failed to accomplish the full purpose of communication in that they have admitted but a bulky and unsatisfying resource for response. Limitation in the expression of thought, longer or shorter periods of time intervening, withal a somewhat cumbersome means of interchanging thoughts, has characterized each one of them. At no time had any means been devised whereby communication between widely separated points could accomplish the same results as personal intercourse. Messengers, beacons, towers of flame and columns of smoke, carrier-pigeons, printed epistles, even telegrams, involved an intermediary, and to that extent their power was insufficient. All were equally powerless to permit discussion, to permit immediate intercourse, the interaction of personalities, the give-and-take of two minds and characters. And this interaction of personalities is the aim, the whole *raison d'être*, of communication.

Intercourse over a distance has, therefore, lacked one-half of itself up to the end of the nineteenth century. But with the perfection of the telephone, long-distance communication came into its own. The telephone provides the perfect means of distant human intercourse by admitting the free interplay of personalities, almost as completely as if no distance intervened. Since the beginning of time the struggle has gone on to convey personality, and never has victory been so complete as it is to-day. Never indeed has the need of victory been so great, for more and more is personality coming to be recognized as a great determining factor in every phase of life. It is the power of personality above all which shapes the individual and the social life to-day. In ancient times it may have been enough that "flaming straightway leapt the courier fire from height to height" to tell that Troy had fallen, but to-day the report would be patently incomplete without a personal interview with the victor! "It is



Signal Post Used by the Colonists During the American Revolution

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not so much what is said as the person who says it that makes an impression," observes a distinguished essayist of to-day; and if the impression is to be made at a distance, the telephone alone affords the fullest opportunity. No intermediary dulls the quick effect; no clumsy bulwark of time alters the impression. The personalities are together; the truest, fullest purpose of communication is fulfilled.

The crowning triumph of communication has come with the completion of this great wonder of ages—the slender strand which means the union, at will, of personalities on the Atlantic and on the Pacific seaboards. At a word, a person in New York is in San Francisco. Time and space are as nothing. Sound itself is a tortoise beside the swift currents which bear to the Pacific the voice, the spirit, the emotions, all the infinite and varying qualities which are the man. The intensity of New York, the snow and driving winds outside, are the physical surroundings of the speaker, but he is for a few minutes in San Francisco as completely as if transported thither by Aladdin. The Golden Gate, the riotous profusion of roses, sun-bathed orchard slopes, and the grandeur of the mountains are not more really in the Golden State than is this man who speaks from New York. It is not for these that he has taken the swift transcontinental trip, but the spiritual life, or the business problems of the West; the personal business of his conversational *vis-à-vis*, whatever the object of the communication, it is completely his.

Thus has the age-long problem found fullest revelation. Communication has become another wonder of the world. In a fraction of a second, personality, that substanceless material of the human world, the motif of civilization, spans a continent. The culminating step, thus far, in the progress of communication, this achievement stands, looking forward, and not back. The ages have evolved it; the future alone shall set the limits of its usefulness, shall mold its influence in the onward march of men.

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Co-Ordinating the Nation

Telephone development in the United States has been following the laws of nature. Dr. Jacques Loeb, who has discovered many fundamental biological laws, says that a colony of minute organisms, placed in a glass jar, will swim hither and thither without regard to one another. But when a small quantity of carbonated water is added to water in the jar, the character of the activities of the crustaceans changes at once. All the members of the colony crowd instinctively toward the side of the glass from which light comes. From this phenomenon, Dr. Loeb derives the suggestion that just as the freedom of will of the crustaceans is abrogated by the admission of acid to the jar, so the actions of men respond to environing influences.

The United States might well be likened to the glass jar of Dr. Loeb's experiment. The telephone is the acid which has influenced the colony of human beings to change their social and commercial practices. When the telephone was invented, the United States consisted of 37 commonwealths loosely held together, each filled with energy and enterprise, but lacking in organization and efficiency of action.

The arrival of the telephone changed conditions. The people of the nation saw a new light. Loose ends were gathered up. The confederation grew into a compact organization of 48 States instead of 37. New living conditions were created, social and business methods were put on a broader and more efficient basis, and the passing of sectionalism and race feuds began. The nation became an organized body as it increased its use of the telephone, and there was no loss of the spirit of self-help and democracy that was its birthright. The completion of the transcontinental telephone line now brings new light to a united nation and starts a new period of growth and development as the ideal of universal telephone communication draws nearer and nearer to realization.

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The Vision of the Pioneers

The ideal of a universal system of telephone communication was set up as the goal for American telephone men as long ago as 1878. In that year, Theodore N. Vail, now President of the American Telephone & Telegraph Company, urged the agents of the infant telephone organization to renewed efforts by picturing before their eyes a "grand telephonic system" that would unite all parts of the country.

Six years afterward the Bell Companies were federated. Two of the men who prepared the articles of incorporation have lived to see part of their ambitious program of universal communication come true. These men are Thomas B. Doolittle and Joseph P. Davos. Portions of the original document furnish very interesting reading. Some of the early plans seem trifling now, when viewed in the light of what has come to pass, but they were most ambitious at the time they were outlined.

The marching orders of the Bell Companies said in part: "The general route of the lines . . . will be from a point or points in the City of New York, along all railroads, bridges, highways, and other practicable, suitable, and convenient ways or courses, leading thence to the cities of Albany, Boston, and the intermediate cities, towns, and places; also from a point or points in and through the City of New York and thence through and across the Hudson and the East Rivers and the Bay and Harbor of New York to Jersey City, Long Island City, and Brooklyn.

"And along all railroads, bridges, highways, and other practicable, suitable, and convenient ways and courses to the cities of Philadelphia, Baltimore, Washington, Richmond, Charleston, Mobile, and New Orleans; and to all intermediate cities, towns, and places; and, in like manner, to the cities of Buffalo, Pittsburgh, Cleveland, Cincinnati, Louisville, Memphis, Indianapolis, Chicago, St. Louis, Kansas City, Keokuk, Des Moines, Detroit, Milwaukee, St. Paul, Minneapolis, Omaha, Cheyenne, Denver, Salt Lake City, San Francisco and Portland, and to all intermediate cities, towns, and places . . . for the purpose of connecting with each other, one or more points in said City of New York and in each of the cities, towns, and places hereinabove specifically or generally designated.

"And it is further declared and certified that the general route of the lines, in addition to those hereinbefore described or designated, will connect one or more points in each and every city, town, or place in the State of New York, with one or more points in each and every other city, town, or place in said State and in each and every other of the United States and in Canada and Mexico; and each and every one of said cities, towns, and places is to be connected with every other city, town, or place in said States and countries, and also by cable and other appropriate means with the rest of the known world."

There is the vision of the telephone pioneers. A large part of it already has come true, and the possibility of its full realization is created by the completion of the transcontinental talk highway.

The Invisible Plant

A Yale professor brought a class of engineering students to New York, the other day, on a tour of inspection. They visited several of the large electrical plants in the city and finally marched in on J. J. Carty, Chief Engineer of the American Telephone & Telegraph Company.

"We have come to see your plant, Mr. Carty," said the professor.

"I'm sorry," answered the first of the telephone engineers, "but you can't see it."

There was a strained pause for a moment, and then Mr. Carty, smiling from behind his spectacles, led the students up to a map of the United States over which lay a maze of black lines showing the Bell system. He told them that they could not see the telephone plant because there wasn't a man living who had ever seen it, or ever could see it. If the professor were to take his class down to the Battery, said Mr. Carty, and attempt to walk up-town to Cortlandt Street, showing them the telephone plant in that part of the city, he would fail. By the time they got to Cortlandt Street the plant would have changed. Behind them men would be putting new parts of the plant up elevator shafts, onto office desks, under the streets they had just left.

On the map which Mr. Carty showed the students there was a gap between Denver and San Francisco. But now the engineers of the American Telephone & Telegraph Company have filled the gap, and a part of the telephone plant reaches without a break 3,400 miles across the continent. But the transcontinental line is only part of a plant that is woven into the fiber of the continent. Every crossroads store with the familiar blue-bell sign swinging above its door is as much a part of the telephone plant as the switchboard in the big city exchange.

Twenty-one million miles of wire connect nine million telephones of the American Telephone & Telegraph Company and associated and connected companies, giving service to 100,000,000 people. That is the statistician's description of the plant to-day. But by to-morrow he will be changing his figures again. For he is dealing with a living thing, and life inevitably implies constant change.

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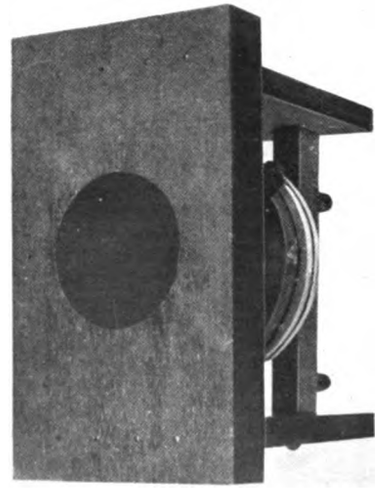

Prof. Bell's Original Telephone, Exhibited at the Centennial, 1876, Philadelphia, Pa.

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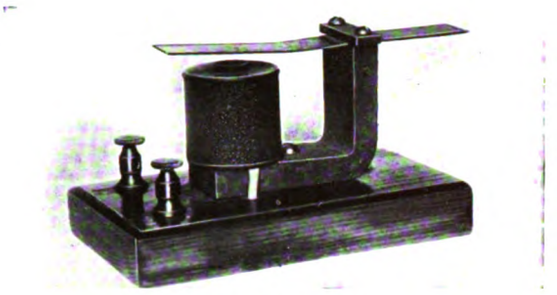
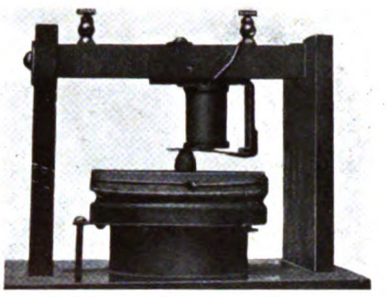
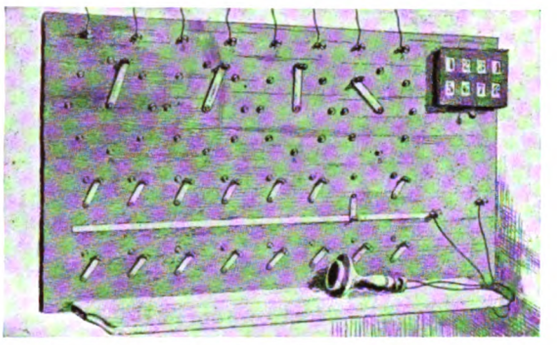


Prof. Bell's Vibrating Reed.

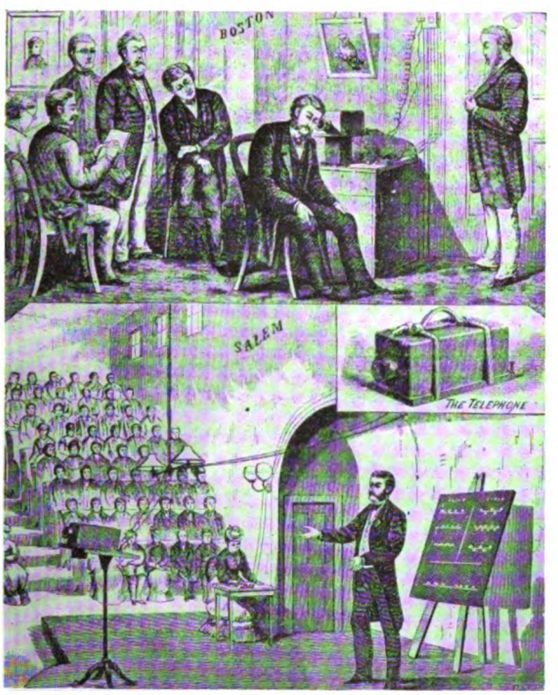


Prof. Bell's First Telephone.

Early N. Y. Exchange.—Boys employed as operators at first, but they were not adapted to the work so well as girls.



The First Telephone Switchboard used in New Haven, Conn., for Eight Subscribers.



Prof. Bell in Salem, Mass., and Mr. Watson in Boston, demonstrating the Telephone before Audiences in 1877.

Dr. Bell at the Telephone Opening the New York-Chicago Line, October 18, 1892.

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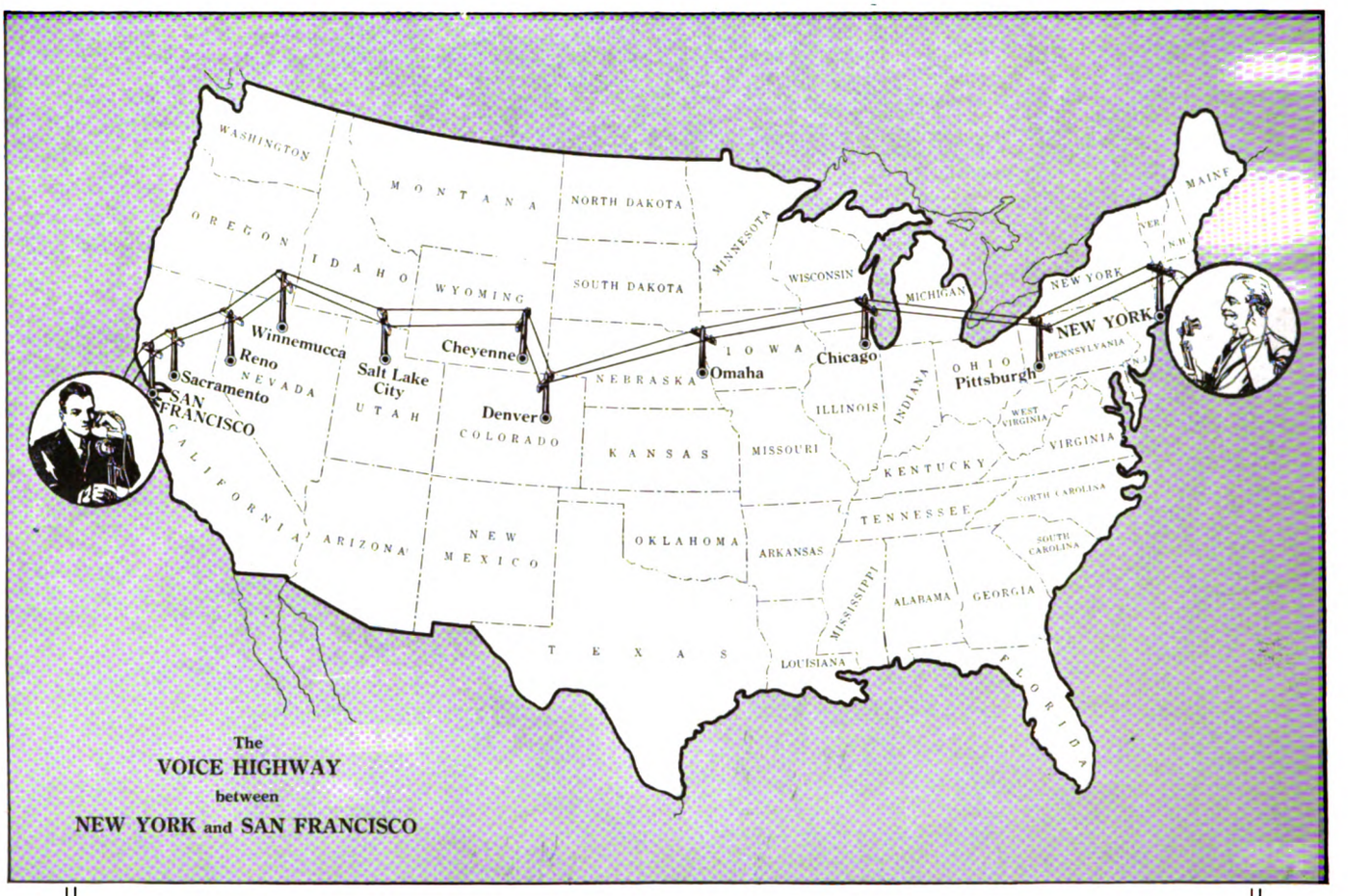

Making a Neighborhood of a Nation

THE TRANSCONTINENTAL TELEPHONE LINE

THE Spanning of the GREAT CONTINENT Unites the East with the West by Ties of Social and Commercial Intercourse.

"Far extends from side to side the field of words," and freed from all limitations of time and space, the mind may leap the continent in an instant, while the barriers of Nature still exist for things material.

This is but a step in MAKING A NEIGHBORHOOD OF A NATION, when in fact as well as in name there will be NO EAST, NOR WEST, NOR NORTH, NOR SOUTH, and ONE PEOPLE, a Hundred Million Strong, will be bound indissolubly by the BELL SYSTEM.

Speech from the Atlantic to the Pacific, from Puget Sound to the Gulf of Mexico, from the Great Lakes to the Rio Grande, will be as common as from house to adjoining house, and the sense of distance lost in the realization of

The Triumph of Science

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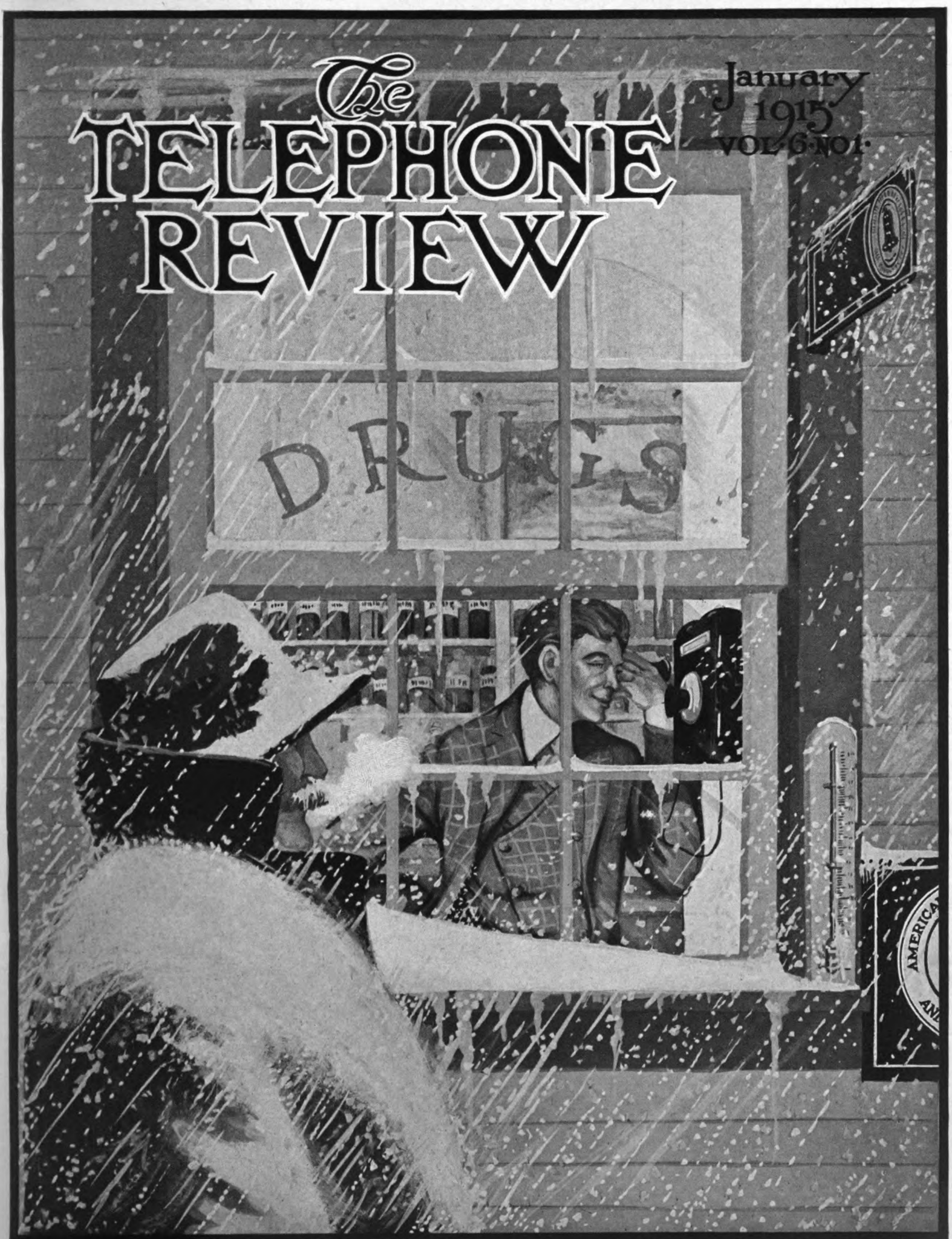

WHY NOT THE TELEPHONE WAY ON SUCH A DAY?

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F. B. Jewett,
President, Manhattan

H. C. Carpenter,
Vice-President, Manhattan

R. S. Scarburgh,
Secretary-Treasurer, Manhattan

J. P. Hill,
Chairman, Albany

F. R. Guardineer,
Secretary-Treasurer, Albany

A. L. Fox,
Chairman, Syracuse

J. L. Parker,
Vice-Chairman, Syracuse

E. P. Brennan,
Secretary-Treasurer, Syracuse

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OFFICERS 1914-1915

THE TELEPHONE SOCIETY OF NEW YORK

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The TELEPHONE REVIEW

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The TELEPHONE REVIEW
J. D. NEWMAN, Editor.

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VOL. VI JANUARY, 1915 No. 1

Nineteen Fourteen

Peace hath her victories
No less renowned than war.
—MILTON.

WHILE war and rumors of war continue to terrify humanity, and ancient civilization seems tottering almost on the verge of annihilation, hope and inspiration for the future may be found in the achievements of the past year along the paths of peace which we in America are following.

To celebrate the beginning of our Sixth Volume, we are printing a résumé of the year 1914. This is not an effort to tell everything that was done or all the important happenings, but to present an unrelated and unassorted jumble of items about things which in themselves are of more local than general interest, but which, assembled, are impressive.

In his address at the Pioneers' Banquet at Richmond, our President, Mr. U. N. Bethell, is quoted as saying:—

"It is a pleasure to observe that the telephone business throughout the world has attracted to its ranks the finest sort of men and women. It is a noble family engaged in a noble work." And again, "I would like to remind you that the strength of the pack is in the wolf, and the strength of the wolf is in the pack, and it is only as we stand together that we can make any great success."

It is the small things that each one of us is called upon to do, and the spirit in which we do them, that, in the aggregate, make the great achievements of the New York Telephone Company and its reputation for strength and character in the business world. We have undertaken, then, to show some of the daily tasks, the ordinary pursuits, the problems and difficulties, which are to be found here and there in our happy family, and how the honorable title "noble family," applied by Mr. Bethell, is fitting.

No effort has been made to describe many of the "big things,"—for example, the Boston-Washington cable, progress in establishing telephonic communication to the Pacific coast, or the scientific problems being solved by our experts in various departments. The columns of our magazine from month to month relate these facts as they mature, while but little is said of the great variety of humbler things which contribute equally to the sum of the whole.

From all Departments word has come to us of the stimulating effect which the preparation of these items has had upon the local forces, and in many of the offices it has been decided to keep a current record during 1915 for future reference. It is interesting and inspiring to see how the separate parts upon which each one is engaged ultimately fit into the pattern and make the mosaic, and it will be helpful if during the coming year we bear this in mind, that our work in the arts of peace is enduring, and a part of the structure upon which the future civilization of the world will rest.

Plan to Aid Employees of Bell System to Become Stockholders of A. T. & T. Co.

FREQUENTLY for several years employees have written and spoken to the Editor of this magazine upon the subject of purchasing stock of the American Telephone and Telegraph Company on "easy payments" or out of wages. The action of the Company, therefore, in formulating and announcing a plan by which this can be done, not only is "enlightened self-interest," as some newspapers have termed it, but a much desired opportunity which will be welcomed by employees in their own interests, entirely apart from whatever indirect benefits the Bell System will derive from it. No industrial enterprise in America has been more ably and successfully financed, and the securities of the A. T. & T. Co. are sought to such an extent that only two corporations can boast as large a number of investors. Moreover, it is significant, as has been pointed out frequently, that a majority are women.

Taking all this into consideration, along with the plan by which employees may purchase stock, it will be seen where the direct benefits lie. How many of us could purchase any kind of stock so cheaply or easily?

Each employee has received a copy of the plan, in which the details are set forth with unusual clearness, but it may not be amiss to go a step further and demonstrate one point which illustrates the investment side of the proposition. It will be noted that if the present rate of dividends, 8 per cent. per annum, continues, the stock will be full paid by November, 1918, or in 44 months, so that employees will be called upon under these circumstances to pay only $88, or four-fifths of the cost of the stock, the other one-fifth being earned upon the investment. To state it differently, for every two dollars invested fifty cents will be added during the period, out of dividends.

The financial advantages embodied in this proposition, therefore, are all in favor of the employees.

Aside from this, the benefits are mutual as between the Bell System and its employees. Close and loyal as their relations have been in the past, it is only reasonable and human that this joint ownership will create a new and greater interest and enthusiasm among the forces, and, not least of all, a more earnest effort to increase the popularity and prosperity of *our* business.

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Nineteen Fourteen

In the Territory Operated by the New York Telephone Company There Were on December 31, 1913, 1,082,765 Telephones, and on December 31, 1914, 1,154,905 Telephones, an Increase During the Year of 72,140 Telephones, or 6.66 per cent

Manhattan—The Bronx Division

On Feburary 26, 1914, the through underground circuit from Boston to Washington was placed in commercial use. There is no underground telephone conversation in the world comparable to this Boston-Washington service. It is 4½ times as long as the longest service in Europe, even the New York-Washington underground being more than twice as long as the longest European underground.

Eight men from the New York Telephone Company sailed from New York August 3 for Panama where, with two other New York Company men, they have been engaged in splicing the underground cable laid by the Western Electric Company across the Isthmus.

A very interesting phase of the work in the Plant Department is the instructing of inspectors and installers as to the performance of their duties. This is done in the Inspectors' and Installers' School, located on the sixth floor at 30 Gold Street. Early this year a school committee, consisting of Messrs G. E. Bennett, chairman; J. A. Lynch, W. A. Kirkbright, R. S. Jewett, and A. W. Oakley, was appointed to revise the course of instruction.

A contest was held in the Gold Street Plant School to determine the relation between time and quality of work. The result showed that the best work was done in the shortest time and the men who had complained of being pushed for time finished last in the contest and did the poorest work.

The A. T. & T. Company's official board was transferred January 24, from the old Long Distance central office to the Cortlandt central office. The official board, consisting of nine operating positions and 514 working extensions is now operated by the New York Telephone Company.

On January 24 the Long Distance central office was shifted from 18 Cortlandt Street to the new fireproof building at 24 Walker Street. The transfer of the wires from Cortlandt Street to the new building was effected without interruption of service.

Considering the importance of the wires, this was one of the largest cutovers ever made in the telephone business. The work consisted of running approximately 113,300 feet of various sizes of cable, extending the Long Distance cables to the new office and re-distributing all of the switching trunks from every central office in and around the city. This transfer consisted of 900 switching trunks, 330 recording trunks, 450 toll lines, 400 Morse loops, 80 call wire toll trunks, 42 order wires, and 550 subscriber loops.

The largest No. 10 lamp P. B. X. in this division equipped for telautograph service was installed at the Hotel Biltmore the first of the year. It consists of twelve telephone sections and twelve telautograph sections. A special feature of the installation is the maid's annunciator, which is installed in the face of the telautograph sections of the switchboard. With this system, the maids throughout the hotel insert a plug in a jack located alongside of the entrance to each room in the hotel. This completes circuits which light a lamp in the plug and at the switchboard, thus enabling a person in the corridor or at the switchboard readily to locate a maid. As far as we know, this is the first installation of its kind ever made.

The No. 10 board was installed by the Western Electric Company. The rest of the telephone equipment in the hotel, consisting of 1,205 stations and three public telephone switchboards, was installed by Installer Ventury, under Foreman Hay. H. A. Rablen exercised general supervision of the job. Lamp Inspector Blessing is in charge of the plant.

The first installation in this division of the new standard telephone equipment to provide for dictation over the telephone was made for the Lord & Taylor Store in February of this year.

The equipment consists of twelve desks, each provided with a typewriter and breast transmitter set connected by a telephone circuit to a Chief Stenographer's P. B. X., which in turn is connected to the main P. B. X. by tie lines.

Members of the firm or employees desiring the services of a stenographer call the Chief Operator from one of the telephones located throughout the store. The Chief Operator connects the calling party to one of the stenographer's desks and the letter or memorandum is dictated over the telephone. This system avoids the loss of time ordinarily experienced in large buildings where stenographers travel back and forth between their desks and that of the persons dictating.

This installation, as well as the installation of eight positions of order receiving tables and 322 telephones connected to a 6-position No. 10 lamp P. B. X., was made by Installer Butler, working under Foreman Francis. The No. 10 board was installed by the Western Electric Company. The entire job was engineered by H. A. Rablen. The outfit is maintained by Lamp Board Inspector R. D. Hahn.

The largest public telephone installation in this division was completed this fall at the Grand Central Terminal. It consists of 108 booths, six switchboards with enclosures, cashiers' desks, wardrobes, closets, etc. These were installed at different locations in the Grand Central Terminal as fast as the several parts of the Terminal Building were completed during the past two years.

The installation work was done by J. H. Kleman of the Repair Shop, and Installer Ventury. The special equipment involved was designed by J. Zu-Hone of the Equipment Engineer's Force, who also made all the detailed arrangements and exercised general supervision of the entire installation.

The largest single position lamp P. B. X. installation for the year has just been installed for the Bendheim Construction Company. This P. B. X. serves twelve apartment houses located within a square block. The board has a capacity of 420 lines and is fed from the Audubon central office. Owing to the distance of the board from the central office, a floater battery has been provided.

The board was installed by Installer S. Rohdt and the battery equipment was installed by C. E. Mason of the Power Plant Force.

The largest magnetic signal P. B. X. in this division was installed for the Mason-Seaman Transportation Company in October. The equipment con-

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sists of twelve operating positions and one dispatching position. The equipment was designed by J. C. Lotz, and built and installed by the New York Repair Shop, with the co-operation of Foreman J. T. Outerson, of the Plant Forces.

The largest No. 10 P. B. X. installation in this Division was made for the Consolidated Gas Company early in the year. The equipment consisted of fourteen operating positions and chief operator's desk. The installation of the board was made by the Western Electric Company and the station work was done by Installer Gaw. The detailed arrangements of the installation were by H. A. Rablen, of the Division Equipment Engineer's force.

During the year the Plant Department completed the replacing of carbon protector blocks with copper protector blocks in all outside cable boxes, to which exposed lines are connected. This will reduce trouble due to electrical storms.

In March, a heavy canvas cover was placed over the switchboard tarpaulin cover at the new Murray Hill central office, to protect the tarpaulin against deterioration from dust, light, and moisture. This was suggested by Night Wire Chief L. M. Allen, and its general adoption has followed. With this protection, the tarpaulin will last as long as the switchboard, whereas, without protection, it is necessary to change tarpaulins after about twelve years' service.

The development of a means of determining definitely at what point the weakening of an operator's receiver magnet will justify removing the receiver from service, was worked out in the Division Equipment Engineer's laboratory by H. C. Coulter. The accuracy of Mr. Coulter's conclusions are being checked by the A. T. & T. Company.

The Inspection Department of Manhattan began the year 1914 with a new supervisory organization consisting of three Inspection Foremen: George M. Crockett, Northern District; William F. Kibblier, Central District; William A. Kirkbright, Southern District, who report to the Chief Foreman. Each inspection foreman has charge of five special inspectors, who supervise the work of the inspectors.

A. W. Oakley, the Instructor of the Gold Street Plant School, is making every effort to keep the work up to a high standard. On examinations during 1914, the average percentage obtained was 91. The library acquired some new books, and responded to 215 calls for books during the year. Last year, less than fifty calls for books were received.

Byron Philip recently completed his 24th year of service with this Company, and his 34th when both his Telephone and Telegraph service are considered. He is responsible for the development of practically all of our wiring plans, as he early saw the need for the more complex methods of connecting together telephones on the same premises, as business outgrew the limitations of the single telephone. His keen insight into the mental processes of men as well as his ability and clear sightedness as to the needs of the plant are responsible for our present high standard of station maintenance. Probably, however, Mr. Philip's most important contribution to the organization was the establishing of a course of systematic training of men in the details of station maintenance work. His foresight in this particular has given to this and to other Bell Companies throughout the United States a large number of trained workers in responsible positions.

Byron Philip

The passing of the Fuller Battery, which at one time furnished talking current at all telephone stations in Manhattan, and was used at telegraph installations for sounder battery, took place in October, 1914, when the Plant Department substituted dry cells wherever Fuller cells were used for local battery telephone stations or telegraph sounders. In consequence, our quarters at 18 Dover Street, which we rented for a battery room were given up January 1, 1915. This place has been in charge of H. F. Romer, with two assistants, A. J. Englehart and John Stang.

H. F. Romer was engaged April 12, 1904, and has been doing battery work most of the time.

A. J. Englehart was employed as a batteryman April 18, 1878, and has been engaged in battery work ever since.

John Stang was engaged April 18, 1880, as a lineman and after a number of years was transferred to the battery department.

These men will be given work in some of the branches of the department.

The Western Electric Company recently completed the installation of additional equipment at the Audubon central office, consisting of 2,500 subscriber lines, seven subscriber sections and three trunk sections.

This addition was made necessary by the remarkable growth in the Audubon central office district. Thirty five thousand one hundred and eighty-six stations are served from this office.

This is the largest number of stations served from any one office in this Company, and is an average of 4.7 stations per line.

The Power Plant Force completed the work of replacing the storage batteries at Worth, Spring, Audubon, and Stuyvesant central offices. These batteries are all of the No. 51-G type, chloride. At Worth, Spring, and Audubon, the central office load was carried by means of the Company's 1,000-ampere hour auxiliary battery and the charging machine during the day, and by the auxiliary battery alone when the switchboard load dropped to less than 100 amperes during the night. At the Stuyvesant central office no auxiliary battery was used to carry the load during the progress of the work. The old plates were cut out in half-cell lots, leaving the remainder of the plates to carry the switchboard load. New plates were then burned in. The second half of the old plates were next replaced in the same manner. This method has many advantages over the old scheme of using an auxiliary battery, and can be used wherever the tanks are not to be replaced and the acid is suitable for re-use.

The Western Electric Company installed an addition of 9 "A" sections and equipment for 2,100 subscriber lines, 600 outgoing trunks, and 250 incoming trunks at the Beekman central office November 1. The answering jacks were re-arranged and multiple line lamps were installed in the old section of the board. This involved the working lines on 61 "A" positions, and necessitated the transfer of 8,440 subscriber lines. These transfers were made by the "block and cable method," without interference to the service.

In April this year, the inspection force was furnished with a new Ford automobile for use in the Bronx, very much facilitating the work. The district is under the supervision of Foreman G. M. Crockett, and in direct

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charge of Special Inspector E. F. Koegler.

Letter complaints have been reduced at the rate of 43% and repeated troubles requiring special inspection have diminished considerably. November established a new record, when only twenty-three complaints were received in the Manhattan-Bronx Division, or .110 per 1,000 lines. This is one of the results not only of good mechanics, but of diplomacy in dealing with the public.

The Western Electric Company installed at the Harlem central office additional equipment for 1,800 subscriber lines, 480 outgoing trunks and 315 incoming trunks October 17. Mechanical locking keys were installed on incoming trunks. At this time, pulsating ringing equipment in the office was changed to superimposed.

In connection with the above work, there was a conversion job on 50 "A" positions, involving 11,400 transfers of subscriber lines, made mostly by the "block and cable" method.

On completion of the installation of the mechanical locking keys, there was a transfer of 1,678 trunks.

Additional equipment of twelve "A" sections, five "B" sections and 2,300 lines at Murray Hill was turned over by the Western Electric Company October 4. This makes the present equipment of this switchboard 105 "A" positions, forty-three "B" positions and 10,500 lines.

The Western Electric Company installed at the Schuyler Information Bureau seven additional 4-position sections of information desk and an Information Chief Operator's desk September 19, 1914.

The installation of a 10-position Wire Chief's test table and associated desk equipment was completed September 4 by the Switchboard Wiring Force and cut into service.

The desk and clerical work for the Murray Hill, Greeley, Bryant, Columbus, Schuyler, and Riverside offices, representing approximately 43,000 lines and 106,000 stations, is handled by means of this equipment. This is the first case of centralization of this work on such a large scale.

Details of the transfer were handled by Wire Chief Kirton and Foreman Prince, under the direction of District Inspector Jewett.

A 52-position information desk, with 220 incoming lines, was installed at the Murray Hill central office by the Western Electric Company, August 10. The information desk in the Bryant-Greeley Building was discontinued at the same time, and all lines transferred to the new Murray Hill desk. The details of the transfer were handled by Wire Chief Kirton and his force.

Twelve line positions on the Cortlandt toll board were converted to tandem positions September 3. This makes a total of forty-eight tandem positions and fifty-three line positions.

The New York Stock Exchange closed on account of the European war July 31. This resulted in the temporary disconnection of 3,700 lines and stations. Bond trading was resumed on November 28 and stock trading on December 12, at which time approximately one-half of the discontinued equipment was cut back into service.

Farragut, which is at present cared for on the Chelsea switchboard, is composed of territory transferred from Madison Square. The installation of the Farragut switchboard in the Chelsea Building is scheduled for completion next year, at which time additional lines will probably be transferred to it from Madison Square. The Farragut exchange will be unique in that it will be the first exchange in Manhattan where the random method of designation will be employed. Under this method, the Chelsea and Farragut exchange districts will be considered as a unit, and as relief is required in Chelsea, new stations, regardless of their location in the district, will be assigned to Farragut. This system is made possible by the fact that the two boards will have a common main frame for terminating underground cables.

March 14 was an unusually busy time for the central office forces. On this day there occurred three central office cut-overs.

At 4 P. M. 596 lines and 1,525 stations were thrown from Riverside to Schuyler.

At 7 P. M. 600 lines from the John and 600 lines from the Broad central office districts were thrown to the Hanover central office district in a theoretical district served by the Beekman switchboard.

At 9 P. M. the new Fordham central office was opened with 900 lines and 2,300 stations. The switchboard consists of 17 "A" positions and 10 "B" positions, and is operated in connection with the Tremont central office.

On January 1, Neal J. Breslin,. a former Batteryman, retired on a pension. Mr. Breslin gave nearly twenty-five years' faithful service to this Company.

On December 26 H. J. Schultz, Division Superintendent of Traffic, completed his thirty-sixth year with the Company, having entered the service as an operator in 1878.

During the year 3,675 members of the operating force received anniversary payments. Of this number 728 received anniversary payments of $25 each, 1,690 anniversary payments of $50 each, and 1,257 anniversary payments of $100 each, making a grand total of $228,400.

Installer Ten Eyck sighed with relief in October when he completed the installation of the telephone equipment for the big new Municipal Building. The installation consists of:

1. *Equipment for the City Departments:*

Twenty-nine P. B. X. switchboards having a total of forty-three positions. There are operating in these boards 316 central office lines, 165 tie lines and 914 extension lines. It required 115,000 feet of inside wire to extend the latter from the cable terminals located at convenient points on each floor of the building to the station equipment.

There are about 240 trunk lines and 1,000 extension stations for the various departments. Approximately 3,000,000 feet of single wire, or 1,500,000 feet of twisted pair, and 19,000 feet of cable were required.

2. *Equipment for the Use of the Public:*

Two P. B. X. switchboards with enclosures and nineteen steel booths, seven of which are equipped for coin box service. This is the first installation of steel booths in Manhattan. The engineering in connection with the installation was done by J. Zu-Hone.

The Department of Water Supply, Gas and Electricity has recently installed new high pressure mains in that section of New York City, Borough of Manhattan, bounded by 34th Street, 24th Street, Madison Avenue, and Hudson River, thus increasing considerably that portion of the city already protected by high pressure fire service. Fifty additional high pressure telephones connected to the switchboard in the Gansevoort Street pumping station have been installed at locations throughout this new area.

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The first house cable work was done in the new Equitable Building in 1914. This consisted of installing cable in connection with moving the contractor's switchboard from the shanty outside of the building to the fourth floor. This is a fore-runner of what will be the largest telephone house cable installation in any single building in the world.

Prior to 1914 the use of 900-pair cable was limited largely to congested subways where it was necessary to use the ducts as efficiently as possible. During 1914 this cable became standardized for subscriber use and in Manhattan-Bronx estimates have been approved covering the installation of about twenty-eight miles of cable of this type.

Some idea of the wonderful telephone growth in the Bronx may be obtained from the following figures:

Starting with the year 1892, which is the first record obtainable, there were but eight telephones in the entire Borough. By 1904 the number had increased to 3,200. The real growth, however, has developed in the past ten years, during which period there was an increase of approximately 28,500 telephones, making the total number of telephones in service in the Bronx in 1914, 31,700.

During 1914 about eight miles of subways were constructed by the Empire City Subway Company for telephone use in the Bronx. This enabled us to complete a large number of blocks on the interior distribution system and to remove much aerial construction.

During 1914, 97 apartment houses, 4 hotels and 23 smaller buildings in which house cable work was necessary were erected in the section of Manhattan north of 49th Street.

Installer Martin Murphy, after rendering service for 36 years, decided that he could spend his time more pleasantly gardening in the outskirts of the city. He, therefore, retired on a pension May 1. Mr. Murphy entered the service of the Company in 1878 as a lineman and was transferred to the installation force in 1901. His industry and thrift are well illustrated by a statement he once made that whenever he was tempted to smoke a cigar he dropped its price into an empty cigar box.

On April 10 the cable house and feeder work was finished for the 32-story Adams Express Building. There are two 600-pair cables feeding the building and four 600-pair riser cables to the various floors; also the house cable.

As in all of our large buildings of recent construction there is a main frame in the basement which takes the place of the old cross-connecting box. It required 3,600 feet of different sized cables, or approximately 1,450,000 feet of conductors to provide for the different floors. This does not represent the entire amount of cable in the building, as a large quantity was run on each floor in order to provide for the different firms.

On November 14 the firm of J. P. Morgan & Company moved into its new quarters at the southeast corner of Broad and Wall Streets. The new offices were provided with desks, furniture, and all necessary telephone equipment complete. The firm was able to open business without any interruption whatever.

The telephone equipment consists of a 3-position standard switchboard and a switchboard for interior service. A large proportion of the stations have keys which enable them to answer calls or hold the line from either board.

Mr. Pegram, the office manager of the firm, complimented Foreman Fitzsimmons on the efficient and satisfactory manner in which he and Installer Muhl handled the job.

On June 29 the cable work for the new 26-story Western Union Building at No. 16 Dey Street was completed. The building is supplied by one 600-pair cable from the Cortlandt Street central office and three 600-pair risers running in wire shafts.

The building contains more than 2,000 feet of cable ranging from 26-pair to 600-pair, or more than 709,000 feet of pairs of conductors.

The Western Union moved into its new building, 16 Dey Street, on June 27. The main private branch exchange for commercial purposes is connected by tie lines to a new private branch exchange in the Walker-Lispenard Building. The latter installation consists of a 20-position special switchboard with 29 trunks for handling telegrams in Manhattan and The Bronx and a 12-position special switchboard with 12 foreign exchange lines to the Main central office in Brooklyn, for handling telegrams originating in that borough.

On July 8 one of the largest submarine jobs ever accomplished in New York City was completed. This was the shifting of the New York end of one of our East River crossings from Pier No. 28 to Pier No. 20 without interruption of service.

The work consisted of picking up and re-laying for the entire distance across the East River eighteen submarine cables containing approximately 3,800 pairs of conductors. In addition it was necessary to build a new subway and to run and splice 10,000 feet of land cable.

A unique submarine cable job was done in 1914 and consisted of the removing of the submarine plant from Pier No. 13, New York, to Pier "C," Jersey City. This plant consisted of old cables laid ten to fifteen years ago, which had been taken up and repaired from time to time.

To secure increased trunk facilities between New York and City Island it was necessary to place additional cable on the Interstate Line and load the existing cable. Four thousand feet of 100-pair No. 19 gauge cable were run and two No. 23-A loading-coil pots were placed on the poles.

The Installation Force was called upon to make an installation of the Federal Revenue Tax Collector on the multi-coin stations in Manhattan and Bronx. As the law became effective on December 1 and the device had to be developed by the Engineering Department within a very short time, the Installation Force was allowed but four days to place 16,200 tax collectors. The job was completed in schedule time, with the exception of a few machines locked up in bath houses.

Stephen B. Goodloe, of the Installation Force, completed his 28th year with the Company on December 3. Mr. Goodloe established the original cable records of the Company and it is said that he carried them around in his hat for years. He has worked on the outside plant during all of his service and has, therefore, been in a position to watch its development from the first.

The construction of the Dual Rapid Transit subway system has necessitated the reconstruction of a large portion of the underground plant in Manhattan, on account of the destruction and re-location of the Empire City Subway Company's ducts. Estimates submitted during 1914 cover the installation of about forty miles of underground cable along the Rapid Transit route. This involves sufficient work to keep a construction gang of

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ten splicers and their helpers busy for about two years. Rapid Transit work in Manhattan is only about half completed and it is probable that considerably more reconstruction work will be required before trains are run in the new tunnels.

Poles, lines, aerial wire, aerial cable, underground and block cables are disturbed, taken out of their natural bed, or ducts, so to speak, and cared for temporarily. The cost of maintaining this plant in its temporary condition is great and causes considerable annoyance. However, we have organized to meet the emergency, as is the natural course pursued in all telephone work, greatly cutting down the time that subscribers and trunks are out of service. Fifteen miles of subways are being maintained in a temporary manner. These subways contain almost all the important toll and trunk cables in the system and a large number of subscriber cables of the highest type. During 1914, due to pick holes, breaks, inefficient support, blasting, etc., 1,600 bad pairs came into the system owing to contractors' work. These have all been cleared up.

The Central Test Bureau work is being handled more efficiently as time goes on. The time of holding the Inspectors has been lessened and the number of failures have been greatly reduced. It used to be necessary to take a large number of men from their regular work and put them hunting trouble. The work of the Central Bureau goes far towards guaranteeing consistent service, especially on rainy days when service is in great demand. It tends to decrease annoyance to subscribers due to cutting off service.

By close co-operation between the splicing and installation forces a marked improvement in the rapidity of handling switchboard removals has been made during the year. The result has been an improvement in the service of subscribers and a decrease in cost to the Company. The following are examples of such removals:

The Western Union Telegraph Co.'s 3-position switchboard was moved from 195 Broadway to 16 Dey Street by Installer Crull. The board was disconnected at the old address at 6:00 P. M. and was in service at the new address at 11:30 of the same evening.

The 2-position board of Robt. Collier & Co. was moved from 416 West 13th Street to 414 West 13th Street by Installer Albo. It was necessary to take the board by means of a block and tackle through a window on the fourth floor. It was disconnected at the old address at 1:00 P. M. and was O. K. at 9:00 o'clock the same evening.

The 2-position board of the Borden Condensed Milk Co., 108 Hudson Street, was moved from the fifth floor to the fourth floor by Installer Williams. The work was all completed between the hours of 1:00 P. M. and 4:30 P. M.

During the past year service trials of various types of central office and sub-station apparatus have been conducted under the supervision of the Division Equipment Engineer; a total of 8,500 units are now under observation. This work involves supervising the installation of the apparatus under test, tabulating trouble reports, making inspections from time to time, computing results of tests, and advising the various departments concerned, of the results of the tests. The details of this work were handled by G. S. Eaton, of the Division Equipment Engineer's office, under the supervision of B. C. McCusker. The following will give an idea of the apparatus and equipment which has been and is at the present time under test:

Steel desk stands, treated with Bower-Barff finish	350
Switchboard cords with steel conductors	2700
Switchboard cords with tinsel conductors	2700
Switchboard cords with moisture-proof insulation	700
High efficiency transmitters	200
New type supervisory relays	204
Specially finished number plates	521
Double-pulley cord weights	25
Paystation P. B. X. switchboard—new design	2
87 cords	50
New type designation strip holders	600
Specially finished transmitters	19
Moisture-proof plug shells	306
Dry cells	70
Drop light hangers	50
Pad holders	12

In September a model of an ingenious window display device, designed to further the idea of telephoning orders, was developed in the Plant Laboratory by J. N. C. Graham, Division Equipment Engineer, and H. C. Coulter. The fundamental idea of this device was furnished by W. E. Johnson, of the Advertising Department. Many interesting electrical and mechanical problems were solved in the development of the device.

In February H. C. Coulter, of the Division Equipment Engineer's office, completed an investigation, lasting one year, on the subject of maintaining subscribers' equipment. Data obtained from thousands of inspections of different types of sub-station equipment, pointed the way to the most economical distribution of the Inspection Force, and the items of work necessary for this force to do when visiting subscribers' stations. The results of this study have been beneficial from a standpoint of economy and efficiency.

The use of a novel tool, which detects and straightens bent switchboard plugs without removing them from the switchboard, was begun in July. This tool was invented by H. C. Coulter, of the Division Equipment Engineer's office.

At the Woman's Industrial Exposition, held at the Grand Central Palace, the week beginning February 5, an exhibit was made by this Company of wiring and apparatus necessary to illustrate the simplest form of a central office connection; i. e., one subscriber calling another in the same exchange district.

The apparatus was mounted on a wooden backboard, and wired by H. Fossetta, under Foreman J. Larsen, of the Switchboard Wiring Force.

The exhibit was demonstrated by J. G. Lowden, G. E. Sedgwick, W. O. Stimpson and J. P. Cozine.

The design and installation of the exhibit was under the supervision of B. C. McCusker, of the Equipment Engineer's office.

Repairs and adjustments to electrical measuring instruments used in the Plant Department are cared for by J. W. Manson, of the Division Equipment Engineer's office. This work involves the calibration, repair, and adjustment of central office voltmeters and ammeters, Wheatstone bridges, battery gauges, and galvanometers.

E. J. Sanchez, of the Auditor of Receipts' Office, has the distinction of being the youngest member of the Telephone Pioneers. Mr. Sanchez became a member of the Pioneers on September 15, 1913, at the age of thirty-four, after twenty-one years of continuous service in the employ of the Company.

Automatic addressograph machines have been installed in the Harlem and Newark Accounting Centres. These machines print three impressions on each bill at the rate of 7,500 impressions per hour. The old type of machine requiring the operator to feed the bills by hand is capable of only 3,000 impressions per hour.

During 1914 our four lectures, "The Wonderland of the Telephone,"

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"The Marvels of a Telephone System," "Our Most Democratic Institution — The Telephone" and "The Telephone Girl," were delivered collectively 252 times before a combined audience of 63,497. Eighteen of these lectures were delivered before the pupils of New York City Day High Schools during school hours.

The "Selling by Telephone" campaign was inaugurated during June for the purpose of interesting merchants in the possibilities of the telephone as a sales ally. To date (December) 4,712 merchants have been interested and 84 contracts, annual value $4,037, have resulted therefrom.

The plan for inviting the public into our central offices was put into operation during March. Since that time 432 tours have been arranged and 4,336 people have been shown through our central offices. During July and August no regular visits were made on account of warm weather.

Since April our moving picture films "The Telephone Girl" and "The Telephone Way" have been shown to 84,415 people in 46 moving picture houses in the New Jersey Division and at the National Efficiency Exhibition and Graphic Arts Exhibition in New York City.

Coincident with the inauguration of the "Selling by Telephone" campaign, and in order to assist the Commercial Department in facilitating the promotion of the work, window "cut-outs" which had been previously prepared were released for distribution. This has resulted in the Commercial Department's arranging for 2,690 displays in merchants' windows from June to December. Previous to this time standard equipment was used in window display work—212 had been arranged, making a total of 3,902 window displays for the first eleven months of 1914.

From the mailing of all advertising literature, including circulars contained in Advertising Catalogue, predirectory post-cards and advertising literature for special campaigns, etc., etc., 3,483 contracts, annual value $99,247.83, were secured.

During 1914 approximately 53,785,900 coins of all denominations, weighing about 286 tons, were taken from the 16,569 coin-box pre-payment telephones in Manhattan and The Bronx.

The number of stations in the Manhattan-Bronx Division increased 23,474 during 1914.

On June 25, District Commercial Manager G. G. Volkmar completed his twenty-fifth year with the Telephone Company. During this entire period his activities have been with the commercial branch of the service.

Special Agent W. E. Huntington, in charge of the Credit Bureau in the Manhattan-Bronx Division, completed his twenty-second year with the New York Telephone Company on April 11.

Local Commercial Manager P. E. Mahoney, of the Tremont office, completed his twenty-second year of service in the commercial branch of this Company on January 22.

Walter H. Nodes, one of the Supervisors in the Madison Square office, recently completed his twenty-first year of service with this Company. He entered the Traffic Department October 9, 1893, and worked as a night operator in the old 18th Street central office, when it was located in the old building at Broadway and 18th Street. He also worked in the Broad and Franklin central offices and was one of the last male central office operators, being transferred to the then Contract Department in 1896, when female operators were first assigned to night duty in the exchanges.

W. P. Ennis, Night Teller in the Harlem office, completed his thirty-first year with the Company on November 21. His first position with the Company was that of lineman.

J. F. Lane, Counter Agent in the Plaza office, holds the record in that office for the longest continued service, having been engaged in May, 1891, thus having been employed for more than twenty-three years. Three Agents in the Plaza Office have never been associated with any other Company or concern, and were engaged as messenger boys, having been in continuous service. Their names are: J. Buehl, Desk Agent, engaged in 1900; A. G. Kerth, Field Agent, engaged in 1901, and J. A. Kelly, Counter Agent, engaged in 1903.

In the Murray Hill Office E. B. Cook, Supervisor, completed his twenty-fourth year with the Bell System on April 7.

A former employee of the Dey Street office, Miss Ethel Philips, whose services extended over a period of six years and who had recently been advanced to the position of Teller, resigned on December 5 because of her approaching marriage. As an evidence of the esteem in which she was held by the office, her fellow employees tendered her a silver service consisting of seventy-three pieces.

A new commercial office, known as Murray Hill, was opened January 2, at 72 East 42nd Street, opposite the Grand Central Station.

The Melrose Commercial Office was moved on August 31 from 366 East 150th Street to 373 East 149th Street, the most prominent corner in the Borough of the Bronx.

The new Post Office, 8th Avenue and 31st-33rd Streets, was opened September 5. The telephone equipment consists of a 3-position switchboard with 20 trunk lines and 108 extension stations. Eight coin-box public telephones were also installed.

During the year a standard installer's tool kit, embodying several new ideas, was developed. The object was to provide tools which were lighter and better adapted to the work, means for keeping them in such shape that they would be readily available for use, and in an orderly arrangement which would permit easy inspection. The development grew out of Installer Bliss' home-made tool fold.

A method of detailed deliveries for installations served by the aerial plant was developed.

A deliveryman leaves an instrument, assuring himself that it will satisfy the subscriber; he leaves the proper amount of wire and material to complete the entire job, and specifies the number of men necessary.

The details were worked out by Foreman Squires and Installer Daly who has been making the deliveries.

One thousand two hundred lines and 3,100 stations were cut over from Morningside central office to a section of the Harlem central office switchboard and designated under the new central office name "Cathedral." This transfer was accomplished without a central office or cable trouble, reflecting considerable credit on Wire Chief Haskins, who handled the central office work, and J. J. Barr, who handled the cable record work.

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Nineteen Fourteen—Continued. Westchester Division

Rockland County now contains twelve physical central offices—the most recent addition being Sloatsburg, opened June 1 with a 2-position switchboard.

Subscribers in the Ramapo Hills and Sloatsburg Districts had been served from the Suffern central office. At the time of the cut-over there were in service 53 lines and 81 stations in Sloatsburg and 9 lines and 18 stations in Ramapo Hills.

On September 26 the Congers central office was moved to a building across the street, a distance of approximately 300 feet. The lines were cut out of service at 9:00 P. M. We began restoring them at 12 M. and at 6 A. M. all lines were restored to service. The outside work was in charge of District Supervisor J. W. Evans, and the removal of the switchboard was in charge of Foreman of Switchboard Wiring O. G. Hunsdon.

On July 2 the lines of the sub-license company of Mr. A. C. Townsend at Kent Cliffs were taken over by this Company and cut into the Carmel central office. Some of the subscribers were cut in as Carmel, others as Kent Cliffs subscribers.

On September 29 a two-position board was installed at Mt. Vernon for observing service on lines served by eight No. 1 common battery offices as follows: Yonkers, Tarrytown, Mt. Vernon, White Plains, New Rochelle, Tuckahoe, Portchester, Greenwich.

During the past year several large private branch exchange switchboard installations have taken place, prominent among them being the installation of a 2-position, 180-line standard switchboard equipped with two central office trunks and 150 extension stations for the Edgewood Inn at Greenwich, Conn. The wiring for this equipment was installed during February and March, 1914, at which time the Inn was closed for the winter; the temperature inside the building being 5 degrees below zero most of the time, it was not uncommon for the installers to warm themselves by walking up and down the snow-covered porch. Approximately 12,000 feet of inside wire were run under these conditions by Installers B. F. Corbet and F. L. Kraft, under the supervision of Foreman W. Andrews.

A new 90-line switchboard, with approximately fifty extension stations, is now being installed for the Burke Relief Foundation at White Plains.

Another large branch switchboard installation, consisting of three branch exchange switchboards, took place in the new Municipal Building, City of Yonkers, as follows:

Municipal offices—180-line switchboard with 10 trunks and 75 extension stations.
Police Department—40-line switchboard with 4 trunks and 11 extension stations.
Fire Department—40-line switchboard with 2 trunks and 16 extension stations.

This job was done by Installers J. W. Fick and H. Scully, under the supervision of Foreman S. Mason.

A number of intercommunicating residence systems were installed during the year by Installer S. Reid, under the supervision of Foreman A. L. Johnson. The principal installations are located in Mt. Vernon and Scarsdale.

A new standard switchboard connecting all the various police stations and principal industries of Mt. Vernon is being installed at the new police building in Mt. Vernon.

Under the supervision of Foreman A. L. Johnson a switchboard installation is under way for the Ward Motor Vehicle Co.

There were two intercommunicating residence systems of seven stations each installed in the Mt. Kisco District by Installer S. Reid.

On September 1 the Plant Order Writing Force of the Mt. Vernon District was transferred from Mt. Vernon to No. 24 Walker Street and consolidated with the New York Plant Order Writing Force, under the supervision of J. J. Campion.

During the year there were sixteen lightning storms and two sleet storms which caused excessive trouble in the Westchester Division. In a number of instances we were obliged to call on the Construction and Installation Forces to assist in clearing the trouble.

During a fire which occurred in the residence of Troubleman W. H. Johnson of Dobbs Ferry, at Ardsley, Johnson and his entire family, consisting of his wife and two children, were burned to death. Johnson had been in the service of the company for five years.

District Equipment Superintendent H. D. Bauer completed the 26th year of his services with the company on May 25.

District Inspector Richard Bogue completed the 29th year of his service with the Company on April 7.

Frank L. Vought, Installation Desk Clerk at Mt. Vernon, completed his 23rd year on March 1.

In connection with a recent extension station canvass in the Rockland Division, the salesman was advised by a gentleman of German sympathies that he would sign a contract in case Germany was victorious in the European war. The card file has been noted accordingly with a bring-up about December, 1915.

Throughout the Company a large force of men has been engaged in compiling an inventory of the plant. It is impossible to convey in a short item any idea of the magnitude of this work,—suffice it to say that it is a real job. The aerial plant of the Company in Westchester, Putnam, and Rockland Counties, Town of Greenwich, Conn., Manhattan and Bronx Boroughs, has been inventoried by a field force of sixteen men during a period of sixteen weeks. There are in all sixty-six central office districts, and at this writing the inventory of the aerial plant in forty-five of them has been completed and is ready for file. It is expected that the entire work in the Westchester Division will be completed considerably before the official date of closing, April 30, 1915.

To improve the appearance of Larchmont, Mamaroneck, and Portchester, the Company has re-arranged its exchange plant at considerable expense and removed the poles along Main Street, Portchester, and plans are now being made to remove the poles from the centers of Mamaroneck and Larchmont.

Indicating the growth of Westchester and Putnam Counties the past year is the fact that an additional toll cable was laid in the toll subway along White Plains Road, between Mt. Vernon and White Plains.

One of the remarkable developments in Westchester County is the apartment house construction at Bronxville, with the spacious and imposing Gramatan Inn as the center; a high-class residential section has developed which now includes six apartment houses. The telephone development in these has been so great that the Company has been obliged to furnish additional telephone facilities to care for the two most recently com-

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pleted, known as Alger Court. It is stated that plans are being prepared for several more of a similar type to be erected in this vicinity.

Along with the inventory and of equal importance, there has been carried on a unit cost study. This has required five men in the Westchester Division and a large amount of study and supervision. The cost of pole line and subway construction has been kept and analyzed since the first of January, 1914.

Whether because the Engineers are such heavyweights and, therefore, too much of a demand on the "Chalmers" or because it was feared they might entirely pass away if obliged to depend longer on shanks' mare or other public conveyances, some one arranged for a renovated "Fordabout" and now life is one—(job) after another without delay.

The track and field contests of the past year have returned winners in the Division Plant Engineer's Force as follows: R. Buist, winner of one-half mile, Celtic Park, also on winning relay team at Celtic Park; W. A. Wagner, winner of 100-yard dash, Newark.

The locality known as Grassy Point, situated along the Hudson River, between Haverstraw and Stony Point, is at present cared for from Haverstraw by about three miles of open wire. It is proposed to transfer this section to the Stony Point Exchange District. In order to furnish Stony Point service it is proposed to extend aerial cable via a pole line, which is now being erected by the Rockland Light & Power Company, and in which this Company will purchase a one-half interest. The proposed line crosses a small creek, which is used at long intervals by brick schooners in getting to one of the brick yards, for which Haverstraw is noted.

Both the Telephone and Lighting Companies propose placing a section of submarine cable at this point and to save expense it is planned to have work done at the same time by one diver—the cost of installation to be shared equally by the two companies.

J. Garvey and T. O'Neil completed thirty-two years of service in August.

Burch Foraker, Division Plant Superintendent, Manhattan-Bronx-Westchester Division, rounded out his twenty years of service with the Telephone Company and attended the Pioneers' Convention at Richmond, Virginia.

E. T. Dabb, E. F. O'Neill, P. Ollweiler and P. Ryan completed twenty-five years of service during the year.

D. G. Shears completed thirty-five years of service.

During the storm of December 6 the trees in Tuxedo Park became heavily covered with ice. The high winds blew these trees through our line, causing about twenty-five poles to fall and breaking all the open wire in the Park. In order to get Tuxedo back into service it was necessary for a number of men to go through the woods while these trees were falling and lay twisted pair along the ground.

Thirty-seven orders for extension stations were gained entirely as a result of telephone interviews by the Mt. Vernon Commercial.

Carl F. Itschner, of the Yonkers Commercial, canvassed for the sale of advertising space on the Directory, by telephone, and out of 235 calls secured the sale of twenty-three spaces, and also fifteen good prospects for subsequent editions.

In 1914 Thomas Nesbit completed his thirty-fourth year of service with Bell Telephone Companies. As he is too active and hearty to enjoy the life of a gentleman farmer, he may still be seen each day, capably fulfilling the duties of his position.

During 1914 the joint-use agreement with the Rockland Light & Power Company has been in effect and considerable saving has resulted to both companies by combining on the same poles wherever possible. Duplicate lines have been avoided, dangerous conditions have been eliminated, and many conflicting poles have been removed. We hope that before very long Rockland County will be a veritable "Spotless Town" as far as pole line conditions go. The agreement has been in force for two years now and in that time a half-interest has been given or received in about 600 poles in the Rockland County district.

A new loaded duplex toll cable has been placed between Yonkers and Dobbs Ferry, which will give additional service to the north and west.

In January we completed a house cable at the Gedney Farm Hotel, White Plains, N. Y. This building is unique in that the central part was the reconstructed barn of the old Gedney estate.

The building as completed is a magnificent one and is fast becoming one of the leading resorts of Westchester County.

Thirty-nine thousand feet of various sizes of cable were placed in service in Yonkers during the early part of 1914.

In the Westchester Division bank agencies for the collection of accounts have been established at the following points: Dobbs Ferry, Haverstraw, Larchmont, Mamaroneck, Piermont, Pleasantville, Rye, Spring Valley, Suffern, and Tuckahoe.

A portion of the Boston-Washington cable was started about May 25 and completed during September. This cable is a standard 74-pair Duplex of No. 16, No. 13 and No. 10 gauge wires and was laid from Melrose to Stamford. Approximately 150,000 feet of cable were laid.

It is interesting to note that the enthusiasm of the men caused all records to be broken in the placing and splicing of this cable,—i. e., the highest number of feet per day were run by a single gang and also the best splicing time was attained.

In order to load this cable with the standard loading it was necessary to build fifteen additional loading manholes. The majority of these holes had to be cut out of solid rock.

Owing to the dangerous electric light conditions on the Nyack-Piermont trunk line it was decided to reroute the trunks by means of new submarine cable, which was laid between Tarrytown and Nyack. This submarine cable was about 18,000 feet long. On account of the shallow water, it could not be laid with the regular submarine boat. A large scow was used and by means of a skilled crew of the Western Union submarine boat the cable was safely laid and terminated.

Twenty-one thousand feet of No. 12 copper wire were removed and electric light wires were raised to the tops of the poles where they will not be dangerous to our men in handling our distributing plant, which runs beneath them. The work of removing this copper wire over the electric light wires had to be carefully done to prevent accident.

Fourteen thousand feet of underground cable and 28,000 feet of aerial cable of various sizes were placed in

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Mount Vernon, New York. This added greatly to the appearance of the town on account of the removal of the open wire and also greatly improved the service.

This year of work in Westchester County has been an active one, over seventy-five new blocks having been completed.

A new trunk line was recently constructed along the side of the new State Highway at Haverstraw, N. Y. This line was one of the most difficult pieces of construction encountered in some time. Poles had to be placed at the base of mountains of loose rock, some of which weighed many tons. Great care had to be taken to prevent jarring this mass lest it slide down onto the road. Therefore the blasting had to be done very carefully, and small amounts of powder used.

On June 24 an additional position was installed in connection with the No. 10 common battery board at the Mt. Kisco central office. This equipment included the installation of the necessary apparatus for 48-volt transmission for long lines. It has proved of great assistance in rendering satisfactory service to the numerous subscribers who have country estates in this section.

The new central information desk at Mt. Vernon, which handles the information traffic for Larchmont, Mamaroneck, Park, New Rochelle, Pelham, White Plains, Elmsford, Scarsdale, Bronxville, Tuckahoe, and Mt. Vernon was cut into service on September 5, the central information desks at New Rochelle and White Plains being discontinued at the same time. As soon as the necessary cable conductors can be obtained, the information traffic for Dobbs Ferry, Hastings, Irvington, and Yonkers, which is now being handled at Yonkers, will be taken over.

Up to and including November 30 there was an increase of 1,721 lines and 2,882 stations in this division. During the year New Rochelle passed the 5,000 station mark and Yonkers passed the 7,000 station mark.

The Peekskill plant was transferred by the Central New York Telephone Company to the New York Telephone Company on July 1, 1909, with 936 stations. On November 30, 1914, there were 1,623 stations in service, a gain of 73.4% in a little over five years.

From January 1 to November 30 there were forwarded to the Revenue Accounting Center 6,666,711 toll tickets, exclusive of Long Distance. Of this number, 3,744,262 represented toll business.

At the White Plains Long Distance Toll Center there were handled 43,902 O. K. Long Distance calls.

Miss Edna Carnaghan was appointed chief operator of the Tuckahoe central office on November 30 to succeed Miss Mary E. Grey, who resigned to be married. Miss Grey had been in the service for over fifteen years.

During the past year, the Ossining central office has served five wardens at Sing Sing Prison; viz.: Messrs. Kennedy, Clancy, McCormack, Weed and Osborne.

In the aggregate, seven operators on the Ossining force have served fifty-nine years.

Seven operators on the Yonkers force were married during the first eleven months.

Miss May Johnson, chief operator of the New Rochelle central office, completed 27 years of service with the Company on July 1.

Geo. F. Lillis, District Traffic Manager, completed 27 years of service with the Company on August 23.

On October 31 fire broke out in the residence of Hamilton Fish at Garrison, and the prompt action of Mrs. Doyle, our agent at Garrison, probably saved the building. Mrs. Doyle summoned the fire company of Cold Spring and called several of Mr. Fish's neighbors to assist.

Clement I. Walker

Organization Changes

Empire City Subway Company

Clement I. Walker, title changed from Chief Engineer to General Superintendent.

Henry S. Swain, title changed from Principal Assistant Engineer to Engineer.

Manhattan-Bronx Division

Commercial Department

On January 2, 1915, a new Local Commercial Office was opened at 1106 Hoe Avenue to handle the accounts of the subscribers in the Intervale Central Office District.

The Bronx District Commercial Manager will personally be in charge of this office, his headquarters having been removed to this location.

Westchester Division

Traffic Department

O. G. Macknight, District Traffic Manager of the Eastern District, appointed District Traffic Manager Harlem, Plaza, and Lenox, Manhattan-Bronx Division.

E. G. Lattin, District Traffic Manager of the Central District, will assume the duties of District Traffic Manager of the Eastern District in addition to those formerly assigned to him.

Central Division

Plant Department

A. M. Sherwin, Construction Supervisor, Syracuse District, resigned.

H. T. Kelley appointed Combination Man at Tully, vice H. P. Dean, resigned.

Traffic Department

Miss Alma Fullerton appointed Chief Operator at Watertown vice Miss Sue Taney, resigned.

New Jersey Division

Plant Department

John T. Blake, formerly District Inspector, Jersey City District, transferred as District Inspector, Newark District.

Vischer A. Randall, formerly Wire Chief, Montclair, appointed Engineer, Newark District.

Henry S. Swain

John V. Eager, formerly Wire Chief, Branch Brook, transferred as Wire Chief, Montclair, Newark District.

Gilbert A. Fineout, former lineman, appointed Line Foreman, Elizabeth Sub-District.

Commercial Department

J. W. Gannon appointed Special Agent, Division Commercial Manager's office, succeeding Mr. John Scott, resigned.

J. A. Tracy, Jr., appointed Sales Manager, Newark, succeeding Mr. Gannon.

S. J. Neville, appointed Chief Clerk, Newark, succeeding Mr. Tracy.

H. A. Zaremba, appointed Collection Supervisor, Newark, succeeding Mr. Neville.

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Nineteen-Fourteen—Continued Long Island Division

A No. 10 common battery switchboard was cut over April 4 at Bay Shore. This office comprises the Brightwaters, Bay Shore, Islip, and Great River Districts and is located in a new leased building, together with the local plant and commercial offices.

A No. 10 common battery switchboard, superseding a 6-position magneto board, was cut over August 12 at Great Neck. This central office is located in the new Grace Building, adjacent to the station. The arrangement of the operators' quarters and terminal room is unusually attractive and convenient.

A new switchboard, with a present equipment of 4,100 lines and ultimate capacity of 10,500 lines, has been installed in the Bedford central office. A third story was added to the building for its accommodation. The board will serve a district known as "Decatur," which formerly worked in the Bedford board. The cut-over was made January 1, 1915. A feature of the combined Bedford and Decatur areas is that the "random" method of distribution is followed, the stations being located at random, without geographical distinction.

Additions were made to the present central office equipment in nine offices in the Brooklyn District, three in the Queens District, and sixteen in the Eastern District.

As the result of an active canvass by the Commercial Department about thirty inter-communicating systems were installed. In the Eastern District the increase in this class of service is most marked. Systems in this district were installed in residences of the following well-known people: Mr. Geo. F. Baker, Mr. H. L. Pratt, Mr. Geo. H. Fay at Glen Cove, Mr. R. F. Howe at Roslyn, and Mr. James Warren Lane at Nissequogue.

A Central Locating Bureau was established at Division Plant Headquarters, with locating wires to all central offices in the Long Island Division within thirty miles radius. Successful locations have been made as far as Glen Cove on aerial and underground cables. All trunk troubles, including open wire trunks, are referred to the Central Bureau for location before sending a trouble hunter on them.

A new 6-position desk, with special arrangements for handling the calls of installers from a central location, was installed at Division Plant Headquarters, with tie lines to each of the Local Commercial Offices in Brooklyn, Jamaica, and Richmond Hill.

In April a new multi-line Traffic Observing Service desk was installed in the Main central office building. By using but four cable conductors to any central office, it is possible with this new type desk to observe service on as many as twenty-six lines. This new desk was designed by the A. T. & T. Company and is the first installation of this kind.

Owing to the success of the experimental Repair Clerk's desk installed by the Engineering Department in the Bedford central office in October, 1913, additional Repair Clerks have been established this year in a number of central offices. The practice is being extended to include all of the larger common battery offices.

Subways aggregating 482,819 duct feet were built. The principal new subways are: Myrtle Avenue, Cooper Avenue to Dry Harbor Road; Broadway, Vernon Avenue to Newton Road; 18th Avenue, 45th to 79th Streets; Shelton Avenue, Flushing Avenue to Queens Boulevard; Center Drive, Douglaston; 14th Avenue, New Utrecht Avenue to 55th Street; Union Avenue, 8-duct multiple tile subway, replacing old Dorset subway in plant twenty-eight years.

Three hundred forty-five thousand eight hundred ninety-four feet of cable, most of which was maximum sized, were placed in subways throughout the Division.

Two hundred thirty thousand seven hundred forty feet of aerial cable and 124,182 feet of block cable were placed, as well as 1,550 feet of submarine cable.

Forty-four thousand seven hundred forty-eight feet of 900-pair cable were placed during the year.

The following heavy gauge cables, aggregating 37,022 feet, were run:

L. I. Toll Center, 547 Clinton Avenue, to the East River Submarine Cable Crossing via a new subway route on the Flatbush Avenue Extension.

Newtown to Flushing—Filling in a gap of 6,721 feet.

Prospect to Newtown—Filling in a gap of 18,301 feet.

Features of pole construction for the year were:

A new line from Easthampton to Three-Mile Harbor Bay; a new line across Lloyd's Neck; a trunk line along the Long Island Railroad from Blue Point to East Patchogue. Attempts to secure the right of way for the last named line have been undertaken repeatedly for the past twelve years. The new line has permitted the removal of the existing trunk line from the main street of Patchogue, where it was badly involved in trees and otherwise unsatisfactory on account of the electric light conditions.

Three hundred and eleven concrete block poles were manufactured during the year, bringing the total number in the plant and in stock to over 800.

The two exceptionally severe storms, February 14 and March 1, made necessary:

The rebuilding of the Barren Island pole line.

Repairing three small breaks in open wire trunk lines.

Considerable reconstruction of the Floral Park aerial cable plant due to electric light and trolley crosses.

The Barren Island line carried two arms of open wire when rebuilt; three miles of aerial cable were placed and almost one mile of submarine cable. The placing of this cable resulted in removing all service restrictions at Barren Island.

Considering the unusual violence of these two storms the amount of damage done to the plant was small.

The Pole and Wire Inventory Inspectors' School for all down-State Divisions was conducted in this Division. The following number of men were trained in this School:

39 Men for New Jersey Division.
23 Men for Manhattan & Westchester Divisions.
3 Men for Central, Hudson & Western Divisions.
35 Men for Long Island Division.

100

Over 3,000 permits for block cable work were secured. About 1,200 new line order right of way and collection cases were handled, and right of way was secured permitting plant extensions in over 200 interior blocks.

During this year approximately 3,000 No. 50-A coin collectors were substituted for the post-payment type collectors in the Brooklyn and Queens Districts, and 651 booths were installed at public telephone stations.

All cable protector grounds in the entire Division were measured and where the resistance to ground was

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high it was brought down to normal. As the underlying soil of Long Island is almost entirely of gravel and sand at or near the surface, this is an important achievement of the year.

A Resident Engineer and Right of Way Agent was appointed for the Glen Cove District, embracing Glen Cove, Oyster Bay, Roslyn, and Wheatley Hills. This appointment has resulted in expediting the contract order work, as contracts are now assigned locally, and insures the immediate handling of facility requests and the preparation of minor engineering plans, all at a decreased cost.

Interest in Accident Prevention and First Aid has been stimulated during the year by issuing "Accident Bulletins" detailing in general terms accidents of a preventable nature and calling attention to how they could have been prevented. "First Aid" is also covered in these bulletins. Twice during the year a copy of Dr. Shields's lecture on "Accident Prevention and First Aid" was loaned to each employee for a few days to refresh his memory on this subject.

A steamship sank 500 feet off the Brooklyn shore and the wrecking company in charge of recovering her arranged a short-term contract for telephone service on the wreck. Five hundred feet of submarine cable were necessary, but the station, which was used for a little over a month, was well worth the installation charges to the wrecking company, who were greatly pleased with the service.

Not a single instance of delay for lack of facilities has occurred in the Freeport Commercial District in two years. Sometimes it was dangerously near, but a good engineer can keep just far enough ahead. Salesman Richmond sold 653 new stations and Salesman Phillips 637 in eleven months.

On May 1 A. E. Bromley, Service Inspector, celebrated the 34th anniversary of his employment with the Telephone Company.

On May 20 D. J. O'Callaghan, Service Inspector, celebrated the 22nd anniversary of his employment with the Telephone Company.

On September 2 James W. Donnelly, Assistant Traffic Manager, celebrated the 28th anniversary of his employment with the Telephone Company.

During 1914 the Traffic Department supervision of P. B. X.'s has been handled by the Traffic Manager of the Complaint Bureau. During this time the following notable installations have been made:

One additional position, magneto signal, has been added for the Robert Gair Paper Company, making a total of three positions now in service in that Company.

A 1-position, magneto signal switchboard was installed in the department store of A. D. Matthews, making a total of three positions in operation.

One position, magneto signal, was added to the switchboard at the general offices of the New York and Queens Electric Light and Power Company, making a total of two positions now in service.

The Ford Motor Company added one position, magneto signal, to their switchboard, making a total of three positions in service.

An 8-position, special lamp board, similar to the one in use at Police Headquarters in New York, was established in the New Police Headquarters in Brooklyn.

A 6-position lamp board, of the Western Electric No. 10 common battery type, was installed in the new building occupied by the Brooklyn Union Gas Company.

Upon the completion of the new station building of the Long Island Railroad Company at Jamaica, plans were made to transfer a number of their offices now located in Long Island City to the new building. In this connection a 5-position, magneto signal, board was installed.

Three positions, magneto signal, were added to the switchboard in Loeser's Department Store, making a total of nine positions in service.

On December 7 two positions were added to the switchboard in the Abraham & Straus Department Store, making a total of ten positions in service.

On the day of the cut-over, which was very stormy, the Department Store was able to handle twice as many telephone orders as had ever been handled in any one day before.

One position, magneto signal, was added to the switchboard in operation at the Jewish Hospital, making two positions in service.

In April a 3-position, 80-line multiple, magneto switchboard was installed in Police Headquarters at Jamaica, replacing a two-position board.

On account of the rapid growth in subscriber lines in Bay Ridge and Sunset, it was necessary to provide additional space and equipment. In this connection the central office building was enlarged and three additional sections of "A" board and one additional section of "B" board were installed. The operators' quarters were refurnished according to the latest standard.

During the month of November, Bath Beach and Borough Park passed the 3,000 mark in the number of lines in service, while the stations passed the 4,000 mark.

On July 12 the throng that visited Coney Island taxed the carrying capacity of the Brooklyn Rapid Transit to such an extent that an explosion occurred in the Coney Island Power House. When the Transit system failed, crowds immediately began using the public telephones and in many instances stood in line at the booths waiting to place their calls.

On August 16 Miss Margaret Lynch, Chief Operator of Hamilton, celebrated the 28th anniversary of her employment with the Telephone Company.

On February 1 Miss Alice B. Lawless, an official board operator (Main), celebrated her 21st anniversary of employment with the Telephone Company.

The Western Electric Company have been working in the Main central office during the entire year. Three "B" sections and five prepayment coinbox sections were added, while duplicate answering jacks and lamps were installed in the message rate and public telephone sections of the "A" board, "A" positions 33 to 74, inclusive.

On April 17 Miss Jennie B. Ryder, Chief Operator of Prospect, celebrated her 22nd anniversary of employment with the Telephone Company.

On March 15 Miss Mary Butler, Chief Clerk, Prospect, celebrated the 20th anniversary of her employment with the Telephone Company.

On account of the growth in subscriber lines in the Prospect central office, three additional "A" sections of switchboard were installed.

During the past year a new building, which will house the South central office, has been completed. The new South switchboard will probably be cut into service early in 1916.

The volume of information traffic has increased very rapidly and five ad-

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ditional sections or twenty positions were added to the Information board, making a total of 52.

The volume of traffic handled over the tandem board in the Long Island Toll office has greatly increased during the past few years, despite the fact that traffic between certain offices formerly routed via the tandem board is now on a direct circuit basis. To furnish relief for this board fifteen additional positions were equipped for handling tandem business.

The "B" board in the Bushwick office has been converted from an electrical locking board to a 4-key mechanical locking, superimposed ringing. Two additional "B" board sections were installed to give relief to the "B" board and both the "A" and "B" boards were provided with a new type of emergency circuit.

During the year Flatbush has passed the 8,000 mark in lines and the 13,000 mark in stations in service.

A new central office building has been erected at 1421 Ocean Avenue, which will house the Midwood office after July, 1915.

A new central office building was erected adjacent to the Williamsburg central office. This building is now occupied by the Stagg central office, which was cut into service on October 31, 1,500 lines being taken from Greenpoint for this purpose.

On November 8 617 coinbox lines were cut out of the Williamsburg central office into the new Stagg switchboard.

On April 11 Miss Minnie N. Walker, Chief Operator, Williamsburg, celebrated the 22nd anniversary of her employment with the Telephone Company.

On December 16 Miss Mary A. McAlpin, Day Supervisor at Williamsburg, celebrated the 20th anniversary of her employment with the Telephone Company.

On account of the great amount of coinbox traffic handled during the summer months in the Hammels central office, it was found necessary during the early spring to equip four additional "A" positions for handling prepayment calls. Five hundred subscriber multiples were added.

Three additional "A" sections and one additional "B" section have been installed during 1914 at Richmond Hill.

One "A" position and 40 subscriber drops were added to the board at Amagansett.

One "A" position and 60 subscriber drops were added to the board at Centre Moriches.

One "A" position and 20 subscriber drops were added to the board at Cold Spring Harbor.

One "A" position and 40 subscriber drops were added to the board at Good Ground.

One "A" position and 40 subscriber drops were added to the board at Northport.

One "A" position and 120 subscriber drops were added to the board at Patchogue.

On June 30 Miss Irene Tompkins, Chief Operator of Long Island Suburban, celebrated her 24th anniversary of employment with the Telephone Company.

Additional subscriber drops were added to the following offices during the year: Babylon, Bridgehampton, Cutchogue, Eastport, Farmingdale, Manhasset, Port Washington, Shoreham.

The Shoreham central office was moved to more commodious quarters during the summer.

On the morning of October 9, between 1 and 2 A. M., two large fires occurred in the districts served from the Rockville Centre exchange. Miss VanDusen, one of the Rockville Centre operators, upon hearing the fire whistle, immediately dressed and went to the central office, which is about a mile distant from her home, to offer assistance to the night operators.

On the morning of October 29, about 1 A. M., a fire was reported in the Village of Huntington. Several operators who were attending a reception, upon hearing the fire bell, reported at the central office to assist the night operators. Among those who reported were Miss N. Ferguson, Miss F. Gallienne and Miss H. Regan.

The Hicksville central office has been changed from Company operated to a semi-agency office. One "A" position and 40 subscriber drops were added to this board.

The Westbury central office has been changed from Company operated to a semi-agency office.

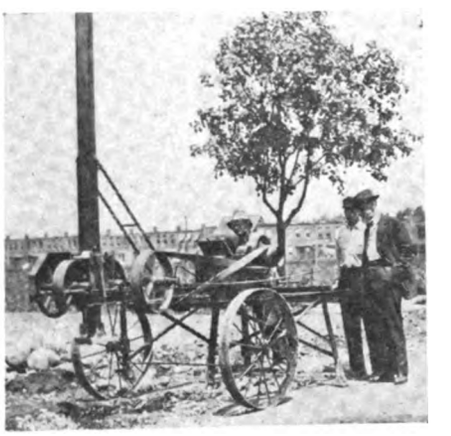
During the past year there have been 157 resignations in the Long Island Division. Out of this total of 157 operators resigning from the service, it is definitely known that 99 or about 63% resigned to get married. Although other reasons were given for the resignation of other operators, it is believed that a good percentage of these also resigned to assume the matrimonial yoke.

The new Bay Shore central office was cut into service on April 7. This exchange serves both the Islip and Bay Shore subscribers. It is a No. 10 common battery office equipped with 1,200 lines and six positions.

The new Great Neck No. 10 common battery central office was cut into service on August 12. The equipment consists of five "A" positions and a subscriber multiple of 600 lines.

Staley Power Tamping Machine

During the subway season just closed, power tamping of backfills was introduced in the Long Island Division with success. About the middle of the season the tamper was placed in commission and immediately thereafter at a time when the field force was entirely unfamiliar with its operation a study showed that 100 feet of trench was backfilled and tamped in 9 man hours. A subsequent check made during the latter part of the season showed that but 6¾ man hours were required to complete the same amount of work—a decrease of 2¼ man hours.



Staley Power Tamping Machine Used With Success in the L. I. Division.

With the continued use of the tamper the time element will, no doubt, show a further decrease.

The machine, in addition to increasing the efficiency of the subway force, tamps the backfill harder than that done by hand, which will prevent serious settlements and eliminate dangerous pavement conditions. This is a decided advantage in itself.

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Nineteen-Fourteen—Continued New Jersey Division

On March 3 Miss Matilda Neuberth, Chief Operator of Rahway, completed her thirty-first year of continuous service with the Company. She was the second operator employed in Rahway, and during her whole term of service she has been in charge of that office. The Rahway office was opened in 1882, with Miss Annie Rice as operator. When she resigned to be married, Miss Neuberth was engaged to take her place. There were then but eight telephones in Rahway, or one to every 750 people. There are now 936 telephones, or one to every twelve persons. In the pioneer days Miss Neuberth was telephone operator, wire chief, cashier, commercial and advertising agent; but even with all of these miscellaneous duties she had time to crochet, sew and read. For seven years Miss Neuberth did not lose one day from duty, which is remarkable, as this period covered the month of the great blizzard of 1888. Her cheerful voice, hearty co-operation, and mastery of details have won her the admiration and friendship not only of her business associates, but also her subscribers.

Miss M. G. Paul, Chief Operator of the Paterson central office, completed her thirty-first year of continuous service with the Company on April 11. With the exception of nine months in 1911, when she was the supervising chief operator of the Englewood District, Miss Paul has been connected with the Paterson office during her entire term of service. When Miss Paul came with the Telephone Company there were about 175 telephones connected with the Paterson office and the operating force consisted of three operators. In 1890, Miss Paul was made chief operator of the Paterson office and acted in that capacity until April 1, 1900, when the Paterson central office was moved to its present location and the switchboard was changed from magneto to common battery. As was the case with Miss Neuberth, Miss Paul's duties were varied during the period previous to 1900, as she acted in the capacity of material clerk and "inside man." Miss Paul was chief clerk at Paterson from 1900 to 1905, at which time she was again made chief operator of the Paterson office and she has held this position ever since, with the exception of the time when she was in the Englewood District. At the present time, in addition to being chief operator at Paterson, Miss Paul is supervising chief operator of ten other offices in the Paterson District, some of which she visits each week. She makes most of her visits to these offices in a Ford car, which she drives herself.

During the past year, Miss P. F. Squier, Chief Operator of Elizabeth, and Miss M. T. Hinch, Chief Operator of Madison, became eligible for membership in the Telephone Pioneer Society of America, each having been in the employ of this Company for twenty-one years. The New Jersey chief operators who are already members of the Pioneer Society are: Miss A. Greenslade, Chief Operator of Market; Miss M. Lee, Chief Operator of Bergen; Miss M. Neuberth, Chief Operator of Rahway, and Miss M. G. Paul, Chief Operator of Paterson. Mrs. L. M. Davenport, who is Manager of the Newark School, and B. T. Tighe, the District Traffic Manager of the Monmouth County District, are also Pioneers; the length of service with the Telephone Company of these members ranges from twenty-two to thirty-two years.

About 400 operators were trained by the Newark School force during the past year. Seventy-five per cent. of this number were trained in the Newark School and the remainder in the branch schools and small central offices of the New Jersey Division. About 5,000 applicants for telephone operators' positions have been interviewed since January 1. The majority of these people were interviewed at the Newark School, a small number by appointment in distant towns and the remainder at Jersey City. Most of the interviewing was done by the School Manager personally.

The new Arlington common battery switchboard was cut into service on April 11 with 448 lines and 996 stations. In June, 119 lines and 169 stations, previously served from the Branch Brook central office with Harrison designations, were transferred to the Arlington switchboard. On December 1 the number of lines and stations served by the Arlington central office was 14 lines and 1,296 stations.

The Jersey City District has three Pioneers among its number, namely, H. Boutillette, C. E. Shackford, and J. B. Finnerty. Mr. Shackford is the oldest in point of service, having thirty-one years to his credit; he started as night operator in Paterson in 1883. He is now Wire Chief of the Union exchange.

J. B. Finnerty came with the Company in 1887 as night operator in Tompkinsville, S. I. He is now Wire Chief of Tompkinsville.

H. Boutillette started to work for this Company March 14, 1888, two days after the blizzard. At that time he was guaranteed one week's work. In 1907 he was appointed chief line foreman of the Jersey City District, which position he now holds. Mr. Boutillette was night operator for the old Domestic Telephone and Telegraph Company in 1879.

A heavy northeast gale which visited the New Jersey coast Saturday, January 3, and which continued with increasing fury January 4, caused at Sea Bright one of the worst storms the inhabitants can remember. The high tide on Sunday carried away a portion of the $100,000 Octagon Hotel and numerous large cottages; the water was over the peninsula north of Sea Bright at several places, but the damage to the telephone plant was very slight. Most of the extra work put upon the Plant Department at this time was caused by the necessity of temporarily removing loops to allow buildings to be moved away from the threatened area.

A severe northeast storm broke over Sea Bright, December 5, 6 and 7, the wind at times reaching a velocity of 64 miles an hour, and the town being inundated from the ocean to the Shrewsbury River. North of Sea Bright the surf twisted the railroad tracks and forced them against the Western Union Telegraph Company poles which were thus thrown against the Shore trunk of the New York Telephone Company. The cable messenger of our pole line prevented the Western Union poles from falling.

Telephone traffic at the Sea Bright exchange was greatly increased while the storm lasted, the telephone being used extensively by the local people, insurance men, newspaper reporters, etc.

The new Milltown central office was cut into service on May 21. This is a magneto exchange equipped with a 100-line magneto switchboard. At the time of the cut-over there were twenty-one lines and ninety-five stations cut into the Milltown central office from the New Brunswick central office.

One of the most difficult maintenance jobs the Jersey City District has had to contend with was the removal of ninety poles on the New York line, on account of the widening of the Bellville turnpike. These poles were

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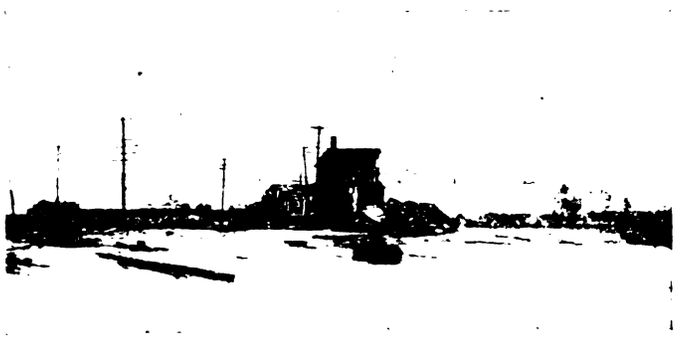
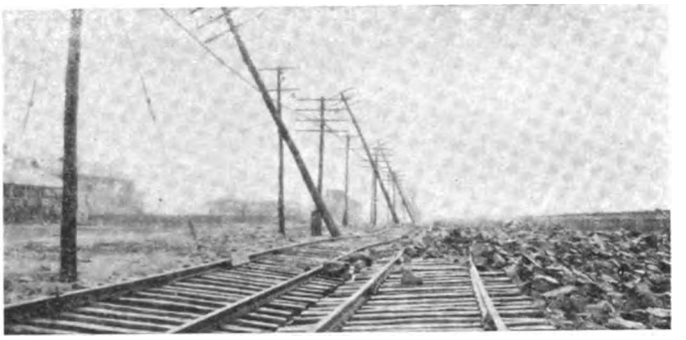


Cottage of Mr. Calvin Hendricks at Sea Bright, N. J., Destroyed on Night of December 7. Photograph Taken the Next Morning.



Railroad North of Sea Bright. The Waves Drove the Track Against the W. U. Poles Which Would Have Gone Down But for Support Afforded by Our Telephone Cable. Dec. 8, 1914.

set in the Jersey Meadows and in many cases it was necessary to chop away the logs and branches which were originally placed as a foundation for the turnpike, before the poles could be moved.

Passaic has the largest underground cable in the New Jersey Division. A 900-pair 22-gauge lead cable was placed on Lexington Avenue, between Monroe Street and Jackson Street, Passaic, N. J., March 1. It was an out-of-service job as it was necessary to pull out a 200-pair cable in order to get a duct for the 900-pair. The work was started at midnight February 28. A sleet storm, the worst ever experienced in this section, began about noon March 1. The men worked night and day under the most trying conditions for two days and two nights until the work was completed.

The storage battery at Passaic was replaced on October 23, after seven years and seven months of service. When the old batteries were taken out it was found necessary to remove the tile and cement floor as the acid had disintegrated the cement in places. The steel framework of the building was found to be O. K., but the iron armored-conduit containing the 1,000,-000 circular mill wire from the battery to the power board had a large hole in it. As the insulation on the wire was all right the hole in the pipe was repaired by placing a lead sleeve over it. The exchange load was carried by the charging units with a Type 11-F storage battery floated across them. An additional vent pipe was installed.

A police recording system was installed in Edgewater, N. J., November 14. It consists of ten iron police boxes with recording attachments, a ten-line monitor P. B. X. and the central station recording apparatus.

An aerial duplexed loaded toll cable was placed between Plainfield and Somerville, a distance of 11 miles, and a similar cable between Perth Amboy and Metuchen, a distance of 5.3 miles.

All the 37-A repeating coils in phantom circuits in the New Jersey Division were replaced by the more efficient No. 46-A coils.

Subway and underground cables have been constructed in the centre of Bound Brook, preparatory to the cut-over to common battery, which will take place early in 1915.

During the year a total of 75 miles of aerial cables were placed in the district. This included the construction of comprehensive distributing plants in the central office districts of Fanwood, Jamesburg, Woodbridge and Milltown, as well as extensions to the existing aerial cable plant in the following central office districts:

Asbury Park	Perth Amboy
Belmar	Tottenville
Elizabeth	Matawan
Metuchen	Red Bank
Rahway	Deal
Westfield	Spring Lake
Dunellen	Point Pleasant
Bound Brook	Lakewood
Somerville	

Foreman John Desmond, of the Paterson District is in his 22nd year of service with the Company. He started as groundman with the N. Y. & N. J. Telephone Company.

Foreman John Kane, of the Paterson District, has just completed 31 years of service with the Company. He started as groundman with the Western Union Telegraph Company.

About 500 feet of subway, about four miles of underground cable and about thirty-two miles of aerial cable, to improve distributing facilities and provide for growth, were completed November 14. There were about 500 poles placed and replaced.

The Westwood central office was moved in June. A canvass of the central office district had been made prior to this date by the Commercial Department, and had been so successful that it was necessary to add an additional position to the switchboard to care for the increase in lines. During the early part of the year about eight miles of aerial cable, as well as underground cable in the centre of the town had been placed to care for the growth. After the new office was opened the code ringing subscriber bells were changed to selective ringing bells, and a long farmer line of twelve subscribers was reduced to four-party line basis.

In the Ridgewood and Park Ridge exchange districts about 1,800 feet of underground cable and about 3.1 miles of aerial cable were placed to provide for the removal of attachments from a high potential transmission line in Ridgewood and to provide for growth. The job was completed July 28.

During the year 1914 the Hackensack Storeroom building celebrated its 197th birthday anniversary. It was built in 1717, having been a farm house originally. Later it was changed into a colonial style residence, and for the last two years has been serving as a Company Storeroom. Frequently the storeroom is visited by some of the older people of the town, who express their regret at the sight of the shelves filled with supplies, where the parlor used to be.

In the Hasbrouck Heights, Ridgewood, and Englewood exchange districts the running of about eight miles of aerial cable and the placing of about 161 poles in order to provide for growth and improve distributing facilities were completed June 25. A few days after the March storm the new aerial cable work was completed. Much valuable time was saved in restoring service on open wire leads which were down, by reconcentrating subscribers' loops into the new cable.

The laying of 1.5 miles of under-

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ground cable and the running of about 22 miles of aerial cable to improve distributing conditions and provide for growth in the Passaic and Nutley central office districts have been completed.

The placing of 16,250 feet of aerial cable varying in size from 200-pair 22-gauge to 25-pair 22-gauge cable, to improve distributing facilities in Little Falls, has been completed.

In the Hackensack exchange district, which includes Hackensack, Hasbrouck Heights, Oradell, Westwood, and Park Ridge, no complaints known as Class "1" have been received in the past twenty months.

By using one of the Company's automobiles to drive a generator charging the New Dorp central office battery, the office was kept in service when the electric current failed after the blizzard of March 1.

The subway on the face of the cliff, shown in the accompanying photograph, is the main feed from the Hoboken central office to the Webster central office district, which operates from the Hoboken switchboard.

This line of ducts connects the subway on 8th Street, Hoboken, with the subway on Congress Street, Jersey City Heights. It was built in 1908 when there were approximately 250 lines working through this route.

During August a new 900-pair cable was placed in this section of subway, which makes a total of 2,100 pairs in the feeder.

This shows the rapid growth of the telephone business in this section, which is typical of the telephone situation in the northern part of Hudson County.

The class of service rendered to the East Millstone subscribers was changed June 16 to common battery semi-selective ringing. At the time of the change the East Millstone exchange area was changed and three lines and twenty-one stations were taken from the New Brunswick central office and added to East Millstone.

Seven private branch exchanges with fifty-four extension stations have been added in the district of New Brunswick during this year.

On December 1, F. V. Terrill completed his sixteenth year in the telephone business. Mr. Terrill was engaged by the Treasurer's Department of the New York and New Jersey Telephone Company December 1, 1898. Since February 1, 1911, Mr. Terrill has been Local Commercial Manager at New Brunswick.

The Perth Amboy District has just completed one of its most successful years in the installation of switchboards, having installed 12 new boards, including a 40-line board placed in the new $125,000 Y. M. C. A. building just completed, and one in the Castles' Ice Cream Factory, one of the largest factories of its kind in the State. The installation of the above brings the total to 35 switchboards for the district. This amounts to one switchboard to every 1,000 inhabitants and one to every 85 subscribers.

Main Feed from Hoboken Central Office to Webster Central Office District.

Early in the year the Tompkinsville District having passed the 7,000 station mark, active work was undertaken by the plant to push to completion about 26 miles of cable, which will serve the outlying sections of the district.

On June 24 the number of stations to each 100 people in the Orange District was:

Orange Exchange	
City of East Orange	15.7
City of Orange	8.25
Town of West Orange	8.8
South Orange Exchange	
Village of South Orange	17.33
Maplewood and Hilton	17.33

In December the South Orange central office district passed the 2,000 station mark, showing a development of 18%, or approximately one telephone to each six persons.

In the City of East Orange there are 13 blocks that have a telephone development of 100%.

The Plant Department of the Orange exchange have installed a number of stations during the past year on account of sickness. In one case a young man from the East Orange High School was taken ill with scarlet fever. An extension station was installed in his room and every day his lessons were given to him over the telephone, thus enabling him to graduate.

In June the Summit Commercia. Office was remodeled.

Seven contracts in one day is the fine record established for this year by both Salesmen Marquard and Smith of the Morristown District.

In October C. H. Smith, salesman in charge at Summit, completed his 24th year in the employ of this Company.

On November 6 the last splices were made in the two 600-pair cables serving the South Street and Madison Avenue section of Morristown. These were the first 600-pair cables in the town.

Of the 140 occupied houses in Mountain Lakes, a real estate development served by the Boonton exchange, 115 have telephone service. This is an 82% development as regards subscribers and about 90% when extension stations are also considered.

The Newark District, comprising the municipalities of Newark, Harrison, East Newark, Kearny (Arlington), North Arlington, Belleville, and Irvington, in September of this year passed the 31,000 station mark, the number of stations in service on December 1, 1914, being 31,374.

A 16-line, 6-position order receiving table was installed in the department store of L. Bamberger & Company on July 31, making a total of three order receiving tables in the Newark District.

During 1914 the Newark Local Commercial Office gave thirty telephone lectures to a total of about 2,500 people; moving pictures were shown in four theatres to approximately 17,000 people; 138 window displays were arranged; 13 central office visits were made with a total of 1,050 visitors.

The new Arlington central office was cut into service on April 11. The new office will serve all subscribers in the Town of Kearny and North Ar-

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lington. The cut-over was witnessed by thirty-seven Town of Kearny officials, including Mayor Torrence. The following Saturday, April 18, the building was thrown open to the public. From 2 to 10 P.M., 596 visitors, not counting children, were conducted through the several departments.

One hundred and twenty-four members of the Newark Board of Trade were conducted through the Market central office May 15. The following letter was received from President Hamburg:

Mr. E. W. Wollmuth,
Loc. Com'l Mgr. N. Y. Tel. Co.,
Newark, N. J.

My Dear Mr. Wollmuth:

Your kind invitation to inspect the telephone plant was accepted by a large number of our members and I can assure you that the time spent at your plant to-day was profitable and interesting.

In a large industrial center such as the City of Newark, where interests are so great and the demand for telephone service so extensive, it is astonishing the amount of work connected with the operation of so large a plant, and to the ordinary subscribers it is almost impossible to realize the state of perfection you have reached in the operation of the Newark Exchange.

I can assure you that our Board appreciated your kind invitation, and in behalf of the Board, please accept our sincere thanks. Very truly yours,

(Signed) A. V. HAMBURG, *President.*

On invitation of the Board of Trade of the City of Newark, F. H. Bethell, Vice-President, addressed the Board of Trade June 10, on "United States vs. The World" or "Private vs. Government Ownership."

A new central office district known as Manasquan was established, taking in part of the Spring Lake District. This involved an extension of the local area of Point Pleasant to include the new Manasquan area, Manasquan being made local to Spring Lake and Point Pleasant. The change effected a reduction in the mileage charges in Brielle.

On account of a request on the part of the United States Government for improved telephone facilities at the Sandy Hook Reservation, a central office district known as Fort Hancock was created, Highlands and Sea Bright being included in the local area.

Selective ringing was installed in Middletown in the spring and additional facilities in the Red Bank switchboard were recommended and installed for Middletown this fall.

Mr. McEwen, Salesman, sold the back cover of the New Jersey Division Telephone Directory to the Taxi Company on a one-year contract beginning with the October, 1914, issue.

During 1914 a private branch exchange of 45 stations was installed in the Hotel Lincoln, 882 Broad Street, Newark, N. J.

Arrangements have been made with the Public Service Corporation of New Jersey, through their Advertising Department, for window displays in their twenty-eight local offices throughout the New Jersey Division of our Company. Necessary advertising matter has been delivered and it is planned in accordance with instructions issued by the Public Service to display this advertising in conjunction with an approaching canvass for the sale of gas and electric appliances.

The Selling by Telephone Campaign has been productive of some very good results in the Montclair District. H. W. Smith, the salesman who conducted this work, has interested a large number of merchants and arranged a number of displays. An increase in messages and the installation of additional equipment have resulted in several instances.

The telephone canvass for extension stations conducted by one of our salesmen in Montclair during September resulted in securing contracts for fourteen stations. The time devoted to this work was thirty-three hours.

The following employees in the Newark Local Commercial Office have completed ten or more years' service in the telephone business:

J. H. Donnelly, who is a Telephone Pioneer, completed his 34th year of service August 9, 1914, having entered the telephone business August 9, 1880, as a clerk, canvasser, and collector, with the Domestic Telephone Company, Newark. He joined the ranks of the New York and New Jersey Telephone Company May 1, 1887.

Mr. Donnelly has served several terms as an Alderman from the 5th Ward, and during his last term as an Alderman in 1913, as well as during 1911 and 1912, was President of the Newark Common Council. He has recently been appointed a member of the Board of Police Commissioners of Newark. He is an honorary member of Company A, National Guard, New Jersey.

J. L. Gray entered the employ of the American Telephone and Telegraph Company Auditor's Office, September 28, 1904, coming with the New York Company as a clerk in the contract department, Jersey City, October 27, 1907.

E. L. Prosch entering the employ of the Company as a clerk in the Plant Department on October 2, 1904, was transferred to the Newark Local Commercial Office as salesman on February 17, 1913.

W. D. Leslie entered the employ of the Company as a stenographer in the District Manager's Office at Newark August 25, 1902; October 13, 1914, he was assigned as counter salesman.

F. B. Tillou is a Telephone Pioneer. His telephone career began on April 7, 1889, as an operator in the Traffic Department. Mr. Tillou's present duties as collector date from June 1, 1913.

J. A. Tracy, Jr.'s employment dates from June 1, 1904, when he was made clerk in the Collection Department of the Company, 8 Erie Street, Jersey City. He was appointed chief clerk in the Newark Local Commercial Office on May 1, 1913.

C. W. Van Zee was engaged as a clerk in the Plant Department on March 1, 1898. He was transferred to the Newark Local Commercial Office as salesman on January 31, 1910.

E. W. Wollmuth entered the employ of the Company on March 3, 1902, as a bookkeeper in the Auditor's Office. He was transferred to the New Jersey Division Commercial Department June 27, 1910; was appointed Local Commercial Manager, Richmond District, October the same year, and was transferred to the Newark District as Local Commercial Manager on May 1, 1913.

There were five illustrated lectures delivered in the Montclair District during the period between April 16 and May 1, with an average attendance of eighty persons.

The first contract for an intercommunicating residence system in Montclair was secured in November by William Miller.

Since the Englewood Local Commercial Office was opened, June 1, 1910, the percentage of increase in circuits has been 109%, and in stations 93%.

All eligible employees in the Englewood office are members of the Telephone Society of New York, while all employees of the office have been at one time or another contributors to THE TELEPHONE REVIEW.

In the Englewood Commercial District there are ten telephones to each 100 persons. There are about 9,050 houses in the district and 4,581 stations, an average of one telephone to every other house.

The Westwood exchange was moved into its new quarters in June.

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Prior to the removal, new cable was installed throughout the town, providing ample facilities in all sections. Coincident with the completion of cable facilities, a canvass was made which resulted in a gain of ninety-four lines and forty stations.

In order to relieve a congested section in both Ridgefield Park and Bogota, two suburbs of Hackensack, new cable was installed in December, in connection with which it was necessary to lay new 300-pair, 19-gauge submarine cable 1,100 feet long, across the Hackensack River.

The Jersey City report, February 5, showed a net gain of forty-nine stations, the largest day's gain recorded for the office.

The new Webster central office was established February 5. The district known as Webster serves the Hudson City section of Jersey City, and was formerly a part of the Jersey City central office district.

A switchboard was installed March 10 in the Jersey City City Hall, superseding fifty-one stations on individual lines.

A switchboard superseding eleven individual lines was installed March 16 at the Standard Oil Company's plant, Constable Hook, Bayonne.

April 30 was Telephone Day in the Jersey City Chamber of Commerce. A lecture was delivered before the members at the Down Town Club, Jersey City, and the members taken in a special car to the Bergen central office, where an inspection of the plant was made.

The Hoboken Board of Trade visited and inspected the Hoboken central office May 13.

In September Jos. S. Hough completed twenty-three years of service, having entered the employ of the New York and New Jersey Company at 259 Washington Street, Jersey City, in September, 1891. Between sixteen and seventeen years of his total service period have been spent in the Jersey City District.

On October 9 the Jersey City District passed the 24,000 mark in stations.

Thos. Kelly completed seventeen years of service December 15, having entered the employ of the New York and New Jersey Telephone Company in the Plant Department, Jersey City, December 15, 1897. Of the seventeen years, nine have been spent in the Jersey City District.

In December, the Rutherford District passed the 2,400 mark in stations. In 1905 there were but 450 stations in service.

The Passaic Board of Trade inspected the telephone building on May 25.

The number of stations in the Passaic District passed the 5,000 mark during December.

During 1914 telephone lectures were introduced into the Passaic public schools' free lecture course with pronounced success.

The Drake Business College in Passaic incorporated in its text-books full instructions on the use of the telephone in business offices.

E. J. Higgins was appointed Local Commercial Manager, Paterson District, April 21. Mr. Higgins entered the employ of the Company July 15, 1901, as a clerk. He was promoted to Division Chief Clerk April 1, 1912.

During May the Paterson District passed the 10,000 mark in telephone stations.

On October 5, S. W. Gaylord, Salesman, Paterson Commercial Office, entered his 20th year of continuous service with the Company.

In October a contract was secured with the Board of Education, City of Paterson, for private branch exchange service. The new system superseded party line service installed in the various schools throughout the city, aggregating a total of twenty-nine stations.

In June arrangements were made whereby subscribers may pay bills at the Peoples' National Bank at Westfield, N. J.

In the Elizabeth District lectures were given before the most important civic organizations, larger churches, and schools, to audiences averaging more than 125 persons. This form of publicity is desirable, aids the sales force, and will be pushed during the ensuing year. The moving-picture innovation was introduced in the Elizabeth District at three theatres. These pictures were enthusiastically received before crowded houses on each occasion and resulted in much favorable comment.

On January 3 a private branch exchange service, consisting of two lines and eleven stations, was installed for John R. Truell at Truell Inn, Plainfield. A switchboard, requisitioned for a Santa Claus display in a local department store, was utilized. Salesman J. J. Carty secured the contract.

Immediately after the March blizzard the Plainfield Commercial salesmen and counter clerk "jumped in" with the local plant and O. K.'d approximately one hundred stations.

On June 22 the installation of two coin-boxes in booths accessible from the street was completed at Block's Store, 4 Somerset Street, Plainfield. This idea was originated by Salesman J. J. Carty.

The six thousand station mark was passed by the Plainfield District during August.

Early in October a private branch exchange contract was obtained by Salesman J. J. Carty with the city of Plainfield, providing for extension lines to all the nine public schools.

A special feature was added to the Monmouth County routine for handling orders by sending information to the Plant Department at the time contracts were mailed so that orders could be written in advance and released for work after the return of the signed contracts. The plan proved to be so effective that we got through the season without a complaint, notwithstanding the damage to the "left in" plant by the storm of March.

At Lakewood we recently completed arrangements with a bank, providing for them to act as our collection agents at Lakewood.

Notwithstanding the unsettled business conditions last spring in Monmouth County, the stations in service at the peak of the load this season were about 1,200 in excess of last year. About 2,000 season stations were installed out of a total of about 3,400 from January 1.

A new private branch exchange system was installed in the "New Essex and Sussex" Hotel at Spring Lake. This is the finest installation of its kind in this section. The hotel company constructed a special room for the switchboard and booths, and erected a mahogany counter around the switchboard.

Arrangements are being made for 50 additional stations in the New Monmouth Hotel at Spring Lake on account of the erection of a $100,000 addition to the building.

In July the Monmouth County District passed the 12,000 station mark.

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Nineteen-Fourteen—Continued Hudson Division

At the present time the Hudson Division is rendering telephone service to 78,369 stations, or an increase of 10,148 since January 1, 1914. There are 74 central offices, 25 of which are operated by the Company and 49 by Agents. In this work a total of 873 employees is involved, including both the field and supervisory forces. The weekly pay roll approximates $8,000.

The year 1914 has been closed with the same degree of success and progress that has characterized our previous years. Old policies have been adhered to, only modified where experience and practice have shown improvement; new ones developed as changing routines and conditions required it.

Operating and clerical methods have been consistent with the dictates of the modern school, developed through individual education and stimulated under continual supervision and careful correction. Increases in traffic and stations have been offset by the conservation of energy and elimination of duplicate labor by virtue of which cost figures have been maintained on a par with and generally below those of the previous year.

Our losses from the operating force during 1914 have been 41 less than during 1913, and at the present time approximately 23% of our employees have seen five or more continuous years of service. During 1914, 478 employees received a grand total of $26,200.00 in anniversary payments, 121 of which were in the $100, or seven years or more class.

The higher development of the semi and special semi-agency plan of operation has been fostered and further extensions are anticipated. Employees, as well as non-employees, appreciate the business advantage of this class of operation and little difficulty is experienced in obtaining a high grade of agents, who faithfully guard the Company's interests and service.

New routines and changes in methods have meant no hardship and there has been developed throughout the organization that broader view which condemns no change without experiment and trial.

From 1914 we have learned a great deal. Toward 1915 we look with pleasant anticipation, appreciating that any success which we have attained or ever hope to attain depends entirely upon the faithful loyalty of the telephone operator and employee which has not yet been found wanting. To each one and to all my appreciation is heartily extended.

E. G. ANDERSON,
Div. Supt. of Traffic.

At the North Troy central office on March 2, fire broke out, due to an outside cross with a trolley wire, and burned through the multiple, affecting 130 lines before the force, assisted by firemen, put out the blaze. Similar trouble was also experienced at Highland, but there, as in the former case, prompt efforts avoided the loss of the exchange.

Following several days of thaw and rain, March 28 brought fears of another flood, similar to that which affected the Hudson and its tributary rivers in 1913. The Traffic Department, not forgetting past hardships, were well prepared for what might follow.

At Albany traffic ran slightly above normal, increasing, it seemed, with the rise of the waters, which, reaching a dangerous mark, fortunately receded without great property damage. Schenectady was less fortunate. There, two bridges spanning the Mohawk were swept away, carrying with them all circuits north, causing the death of two members of the Plant Department, who were drowned while on duty. The central office traffic on the 28th trebled itself, the increase largely due to alarms spreading like wildfire of broken bridges, reservoirs and forming ice jams. The waters reached a height of twenty-three and one-half feet.

During August, as during July, Saratoga, influenced by the events centered there, handled traffic far beyond that of normal days. From the 3rd to the 29th the sport of kings ruled. The devotee of the horse and the gay throng which a season's meet attracts, found the operating force, augmented by five additional toll operators, eminently capable of handling the calls which were given to them. During the month approximately 16,000 toll calls were completed, representing a 100% increase. The bulk of our business was to Long Distance points, principally New York, to which city 1,500 calls or an increase of 225 over last year's season were completed.

During the year considerable attention was given throughout the division to featuring telephone lectures with stereopticon views before Y. M. C. A's, church organizations, business clubs, lodges, etc. A great deal of publicity was secured in this way, and a better understanding of the Company's policies and methods was planted in the public mind.

A great deal of attention was devoted at different times to the possibility of handling commercial work throughout the division at less expense through greater co-operation. Arrangements were made at a number of points to handle collections through chief operators or through local banks. A routine was prepared under which plant and traffic employees negotiated simple contracts or took up commercial questions to be referred to the nearest local office over toll lines. At the same time arrangements were made to have collectors handle simple coin-box repairs.

Early in the year F. H. Bethell addressed the Albany City Plan Association and the Poughkeepsie Chamber of Commerce on the subject of Government Ownership of Telephones. His talk was enthusiastically received in each city.

On April 1 the exchanges of the Clarksville Telephone Company at Clarksville, N. Y., and A. A. Gardenier, of Castleton, N. Y., which were operating as connecting companies to the Albany Local Office District, were taken over by the New York Telephone Company. The Clarksville Telephone Company operated exchanges at Clarksville and Rensselaerville; it connected with the Indian Fields exchange which was purchased at the same time.

A. A. Gardenier, whose main exchange was at Castleton, N. Y., had 296 stations. Since these exchanges have been taken over by this Company a great deal of new plant has been installed and much of the old plant—which was in poor condition—has been repaired, with the result that the service has been very much improved.

A total of 646 Company operated stations were thus added to the system.

During 1914 the average supply investment decreased from $2.30 to $1.70 per station. This was due to more careful consideration of requirements and closer ordering.

The use of Ford cars for combinationmen in small offices and troublemen, was extended. Twenty-seven cars are now in use. The people driving the cars are kept informed of the cost by monthly comparative statements. It is estimated that the cost of operating these cars will be about 15% less than it was last year, on account of greater interest shown by

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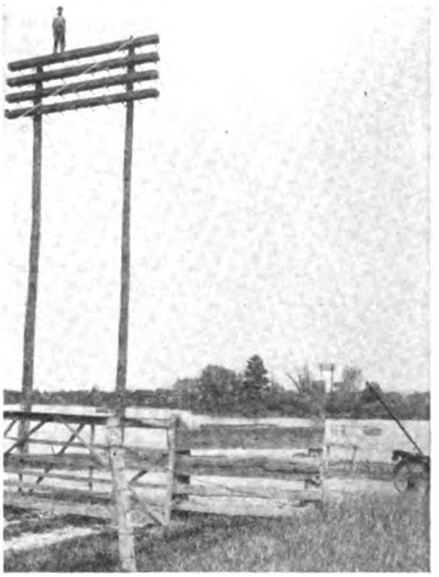


Schuylerville Crossing Built in Spring of 1914.

employees in keeping expenses down. A great deal of faithful work has been done in this respect.

Improvements have been made in installation work, as it is now the general practice to have one man build the loop and also place the instrument. Lost time and carfare have been reduced to a minimum by the adoption of a delivery scheme which permits the installer to travel from one job to another. As a result the number of orders per man has increased with a corresponding decrease in the cost figures.

The events of the year in Troy were the completion of the new building and the installation of the new equipment; the cut-over of the old exchange to the new, and the consolidation of the Commercial Union exchanges in Troy, North Troy, and Watervliet, and the Cohoes and Waterford Company exchange in Cohoes. Four thousand seven hundred and sixty-seven stations were taken over. There are now 11,500 in the Troy local area. The district now has a telephone development of 10.6 per cent.

A river crossing built across the Hudson above Schuylerville last spring has several special features. "H" fixtures, consisting of 55-ft. poles and special crossarms, each one 19 ft. 6 in. long, 8 in. x 12 in., were used. Two spans of 500 ft. and 400 ft. each were necessary, as it was possible to use an island in the middle of the river to support the middle fixture. Special No. 8 steel wire was used to secure the necessary tensile strength.

The first 900-pair cable in the Hudson Division was installed in North Troy in July, in connection with consolidation work.

The work which the Government is doing in dredging out the channel of the Hudson River at Albany and Troy made it necessary for us to move our submarine cables at these points. At Albany we had to pick up and re-lay in a new location, a 150-pair armored cable originally owned by the Albany Home Telephone Company, and at the same time remove four other cables at the old crossing to get out of the way of the dredges. At Troy, where we have three submarine cables, all of them had to be picked up and moved up stream to a safe location to clear the dredges. Later it will be necessary to shift them down stream again, when the new Congress Street bridge is built and the river channel at that place dredged to its full depth.

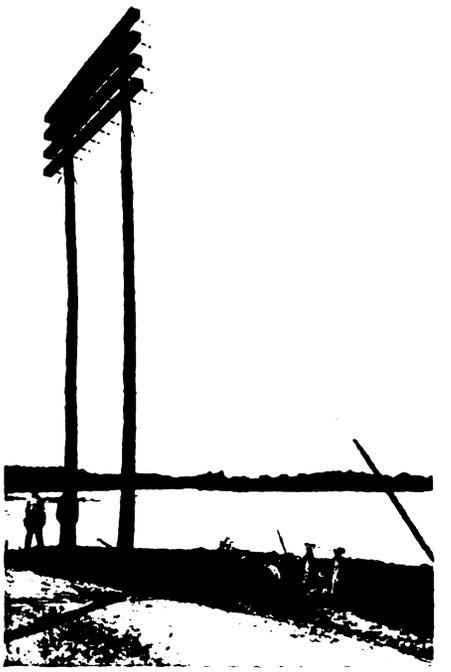
The aerial plant was damaged considerably by snow and sleet storms during 1914. The storm of March, consisting mostly of soft snow, broke down wire, crossarms, and poles in the Kingston and Albany Districts, and cost about $120,000.

The sleet storm of December 7 broke down wire and poles in the Kingston District only, and cost about $30,000. The loyal and efficient work of the men engaged in clearing the storm breaks deserves special mention.

Recently a great deal of publicity has been secured through loaning to vaudeville and moving picture theaters the moving picture films developed to be used in connection with telephone lectures. These films have been presented extensively throughout the territory of the Mountain Home Company and are now showing in the theaters of the Proctor circuit and the Troy group.

The Orange County Telephone Company of Middletown moved into their new company-owned building April 5, on which date their new Western Electric common battery switchboard was cut into service. Stations in service, 1,941; lines, 990. In November the number of telephones in service passed the 2,000 mark.

On October 28, 1913, routine was started in this division covering the method of reporting prospective business to the Commercial Department.



The Other Side of the Schuylerville Crossing.

It is of interest to note that from December 1, 1913, to December 1, 1914, we received 1,756 leads from the different departments in this division. Out of this number we were successful in securing 1,045 new contracts, or about 60 per cent. of the total leads received.

Highland Falls has just reached the 100 mark in telephones, an increase of 113 per cent. since the exchange was opened September 25, 1911. The population of the village is 2,300, but included in this number are many enlisted men from West Point, who board in the village. There are no manufacturing industries, but the toll revenue per station is the largest of any exchange in the district, due to a few people of wealth having country residences located there.

In December, 1914, Glens Falls district showed over fifteen per cent. development in stations in service to total population (Glens Falls City showing 20 per cent. development).

The outside work on the new Albany Main building was practically completed during the year, as the framework was started early in April. When this building is completed next spring, it will be the most modern fireproof office structure in the State outside of New York City.

A new central office area known as Ulster Park was established.

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W. B. Eddy, Special Agent at Albany, N. Y., completed his thirty-sixth year in the telephone field last June. Mr. Eddy started at Whitehall, N. Y., in 1878, representing the American Speaking Telephone & Telegraph Company for northern New York.

Demonstrations of the first telephones were given by Mr. Eddy in Plattsburgh, Port Henry, Glens Falls, Rutland, Vermont, and other adjacent towns by using at night the wires of the Western Union and Montreal Telegraph Companies which were under his management.

In 1882, after the settlement of differences between the Bell and Edison interests, an exchange was opened in the Telegraph Office at Whitehall which was probably the first joint office, and continued for many years, proving of great mutual advantage.

In 1903 Mr. Eddy moved to Albany, being appointed Manager and afterwards District Manager for the Hudson River Telephone Company, which positions he held until July, 1911, when he was made Special Agent, reporting to the Division General Manager.

Mr. Eddy was appointed Manager for the American Telegraph Company at Whitehall in 1863 at the age of fourteen, and is now starting in on his fifty-second year of service in telegraph and telephone work.

Arthur J. Campbell, of Amsterdam, completed his 24th year with the Company last August. He was appointed Local Manager in April, 1898, after having filled the positions of night operator, collector, and salesman.

John O'Brien, Wire Chief, Albany Main, completed his 35th year with the Company on August 8. He started in as messenger and had experience as groundman, lineman, troubleman, and switchboardman. He has been Wire Chief since 1898.

George Allen, Deskman, Glens Falls, completed his 34th year with the Company on January 1. He started in as messenger and has had experience as installer, inspector, and general foreman.

Thomas Frazier completed his 33rd year with the Company last summer. He started in as lineman and in 1901 acted as foreman. Since that time he has served as groundman and stock clerk. He is now working as Janitor in the new Troy building.

W. I. Ayres completed his 33rd year with the Company on March 1. He is now employed as Combination Troubleman in Hudson.

J. A. Carlton completed his 34th year with the Company on August 1. He started in as messenger and worked as operator, installer, and installation foreman. He is at present employed as Clerk in the District Superintendent's office in Albany.

James Carmichael completed his 31st year with the Company on August 1. He is now employed as Installer in Albany.

William Spier completed his 30th year with the Company last February. He has been employed as installer, troubleman, and lineman, and is now working in Ballston as Combination Man.

W. J. Miller completed his 32nd year with the Company last summer and is now working in the Troy office as Clerk. He started in as operator, and has worked as installer, night wire chief, and insideman.

Telephone Employees Save Merrick P. O. Building from Fire

Miss Mildred E. Seaman, Night Operator at the Freeport exchange, recently received a signal between 1 and 2 A.M., but, answering it, she could obtain no reply. The line was that of the Merrick Post Office and, mindful of the robberies which had occurred there at various times, Miss Seaman called Lineman Midmer at his home in Merrick, explaining the trouble to him. He readily volunteered to investigate and soon found that the Post Office was on fire.

But for the keen judgment and level-headedness of Miss Seaman and the ready co-operation of Mr. Midmer, the fire would not have been discovered till some time later, probably too late to save the structure. As it was, the fire department was soon on the scene and succeeded in saving much of the stock of a grocery store in the same building. The switchboard light in the central office was undoubtedly caused by the flames reaching the telephone wires in the Post Office and burning the insulation.

The comment of the *Nassau County Review* in regard to this incident will be appreciated by telephone people, for it shows an understanding of the facts which it is pleasing to find in a casual observer. The *Nassau County Review* said in part:

"This is another illustration of the adaptability of the modern telephone operator, co-operating with willing employees of the Telephone Company for the saving of life and property."

Service

"There's no such thing as poor service; if it's not good service, it's no service at all," says Practical Polly of the *Southwestern Telephone News*. She has also decided, "I don't like that 'Service First' idea—it ought to be 'Service First, Last and in Between.'" Polly has the right idea.

Another Use for the Telephone

A member of the Plant Department tells of another addition to the ever-increasing sphere of usefulness of the telephone directory. He says that several days ago an agent called at his home soliciting orders for a "large House which was going to open a local branch." According to the agent this "House" had been established for "years" and had some fifteen branches in New York City alone.

"My wife having heard that story before," writes our contributor, "decided to try a new way to hasten Mr. Agent along, so she told him that if his Company was as large as he represented it, it would be listed in the telephone directory and she would look it up."

Needless to say no such Company was listed, nor did Mr. Agent wait to hear the result of the investigation.

Telephone as a Burglar Alarm

One of our Albany rural subscribers, upon moving into the city from his country bungalow, was given the option of cancelling his rural line telephone on the short-term basis, or of receiving residence suspension rate for part of the winter. The latter method would involve a saving of $4.00 on the regular annual rate. The subscriber decided, however, that he would rather pay the regular rate of two dollars each month because he thought it would be worth at least four dollars to have such a good protection against burglars. The frequent ringing of the telephone bell, even in an unoccupied house, would provide good means of frightening away marauders.

One good reason for having ten parties on a busy rural line!—G. A. Hilt, Senior Salesman, Albany, N. Y.

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Nineteen-Fourteen—Continued Central Division

During October the first 900-pair cable in the Central Division was installed at Utica, N. Y.

Approximately 3,900 feet of 900-pair cable was involved in this installation.

In Little Falls a gain of 25% was made this year in the number of telephones.

On February 12 the re-districting of the City of Syracuse, which had been in progress since the consolidation of the Onondaga Independent Telephone Company and the New York Telephone Company in June, 1912, was completed in connection with the delivery of the January directory.

Twenty-one operators in the city of Syracuse completed the year ending May 1, 1914, without a single absence.

On July 17 Waterloo, N. Y., was visited by a very severe electrical storm. Every line in the office, both subscriber and toll, was affected, but all were put back into service within half an hour.

Mrs. Emma Carey, Chief Operator at Oswego, N. Y., resigned on October 1, after having been in the employ of the Company over nineteen years.

November 3, for the first time, election returns were handled throughout the Central Division by operators at the switchboard instead of being handled by men at special election bureaus as heretofore.

Miss Mary E. Hanns, Information Operator at Rome, completed her twenty-sixth year with the Company on January 12. Since she entered the service in 1888, Miss Hanns has seen a gradual growth in the office from a 1-position magneto switchboard with less than 100 stations to the present 14-position common battery switchboard with over 2,100 stations.

Miss Anna Sheridan, Chief Operator at Canastota, completed her twenty-sixth year with the Company on August 20. During all these years she has never been absent on account of sickness.

Credit is due Miss Nellie Connors, Chief Operator; William Dunn, Wire Chief, and the Misses Anna Sherman, Elizabeth Burtch, Bertha Reese, and Frances Gould, operators, at Rome, for their coolness and pluck during a fire on the evening of October 4 in a store on the ground floor of the building in which our office is located. A local newspaper said among other things: "William Dunn, Wire Chief, and Miss Nellie Connors, Chief Operator, made quick time and were on the scene within a few minutes after the firemen got to work. . . . The room was filled with smoke and it was difficult to breathe, but the plucky young women stood by their posts and no subscriber had any fault to find with the service given."

The Bath, N. Y., operators dressed a large number of dolls for Christmas for a Deaconess Home.

Five operators in Binghamton have not been absent a day in two years.

The Norwich operators have preserved copies of the *Ladies' Home Journal* for two years and presented them to the Chenango County Poor House.

Miss Ida M. Skillman, Chief Operator at Norwich, N. Y., completed twenty-two years' continuous service with the Company in October.

On February 23 Miss Carrie Niles, Night Operator at Corning, N. Y., upon receiving a signal from the Wells Fargo Express office and getting no reply, notified the Police Station that she thought something was wrong at the express office. After an investigation by the police, it was found that the express messenger had been murdered and the office robbed. The prompt action of Miss Niles in notifying the police enabled them to capture the criminal within an hour. For this she received the gratitude not only of the people of Corning, but of the whole county.

Mrs. Ina Ribble, an operator in the Cortlandt exchange, completed ten years' service in February. During this time she was not absent on account of sickness.

The operators in the Elmira central office dressed sixty dolls, which were furnished by the "Allied Charities" and which were given as Christmas presents to poor children in the Industrial School at Elmira. This was the seventh year that the girls contributed to the happiness of the little tots, and probably will not be the last.

A bed in the Day Nursery, which was given and is maintained by the Elmira operators, was re-enameled in November and furnished with a new "Bell" sign.

Two out of three operators in the Horseheads exchange have not been absent a day during the past year.

D. V. Bradley, Local Manager at Brockport, resigned on December 1 to accept a similar position with the Alleghany County Telephone Company, at Wellsville, N. Y. This Company connects with the Bell system. During his two years' stay at Brockport Mr. Bradley earned for himself the friendship not only of the Bell subscribers, but of practically all the citizens in the village. He was active in the organization of the Brockport Chamber of Commerce, and also formed the Men's Club of St. Luke's Church, which had a remarkable growth during his administration. He was Superintendent of the Sunday School, and was just as popular with the little folk as with the grown-ups.

The commercial office at Honeoye Falls was moved from upstairs in the Allen Block to new quarters on the ground floor in the Harnish Block on April 16, thereby making it more convenient for our patrons to transact their telephone business.

The Fairport commercial office was moved from upstairs in the Bramer Block to new quarters on the ground floor in the Schummer Block in April, and that this move was appreciated by our subscribers is evidenced by the large number of compliments received from them since the change was made.

In January, 1914, the Sanitary Can Company of Fairport discontinued their privately owned telephone system, consisting of a switchboard with two trunks and 35 stations, and contracted with the New York Telephone Company to install a 40-line P. B. X. switchboard, equipped with two trunks and 26 stations.

Miss Mary G. Bates, Cashier in the Commercial Office at Canandaigua, N. Y., completed her 22nd year in the service of the Bell System on June 14. Her first position was manager and operator in the employ of the Empire State Telephone Company in 1892, at which time she was assisted by a messenger boy.

Miss M. A. Purdy, Cashier, Local Commercial Office, Penn Yan, completed her 16th year with the Bell System on March 1. She entered the employ of the Empire State Telephone

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Company in 1898 as manager and operator.

The Rochester University held a debate on Government Ownership, the students taking the negative side being coached by Mr. Balliett and Mr. O'Hea. The unanimous decision of the judges was in favor of the side opposed to the Government Ownership of the Telephone and Telegraph. The same sort of debate was held before the Livonia Grange, at Livonia, N. Y., and the negative side was coached by Local Manager F. H. Rose and Special Agent Balliett. The unanimous decision of the judges was in favor of the negative side, and those attending were open in their statement that they would be opposed to any change in the existing conditions.

A Utica subscriber made 120 calls between 8:30 and 10:01 on Jan. 31. This average of a call every 45½ seconds was improved upon by another Utica subscriber on April 6, who made 150 calls between 8 and 9:40—averaging forty seconds per call.

A burner emitting a very small oxygen-acetylene flame was devised by the Syracuse Plant for cutting iron cable pipes.

In January superimposed ringing was cut into service at Oswego and Norwich. At Norwich additional "A" positions were added and one position changed from an "A" position to a rural position, and an irregular ringing arrangement, which had been in vogue since the installation of the exchange, was eliminated.

In February the first loud-speaking telephone in the Central Division was installed between the test table at the Warren exchange and the James terminal room, in order to facilitate the testing of lines from both exchanges from the Warren test table.

In April new No. 9 equipment, consisting of three operator positions with associated power plant, was cut into service at the Horseheads central office, replacing two positions of common battery equipment.

In May new No. 1 equipment of 9,600-line capacity was cut into service at Elmira, the initial equipment consisting of 32 "A" operator positions and 3,500 subscriber line multiple, 14 toll positions, chief operator's desk, information desk, etc., and complete power plant. In March, 1910, the general offices of the New York & Pennsylvania Telephone & Telegraph Company were partially destroyed by fire. This building was immediately in front of the old exchange and was completely remodeled to accommodate the central office equipment, as well as the district offices.

In August new charging and battery equipment, consisting of new No. 1, No. 2, and superimposed batteries, together with three new charging sets, were cut into service at the Utica central office. The old charging and battery equipment was located in the basement, and considerable saving was made by installing the new equipment on the second floor with the terminal equipment.

The New York State Fair was held from August 31 until September 5, inclusive, at Syracuse, N. Y., and service was furnished from equipment which had been installed in 1913, and retained at the Fair Grounds in quarters assigned to the Telephone Company. To protect the equipment from moisture and vermin during the winter it was necessary to enclose the entire switchboard and main and intermediate frames in tar paper.

So far as known, the first farmer line phantom circuit of its kind established by the New York Company was installed early this year in the Norwich exchange district. This circuit, which is in the nature of an experiment, serves eleven subscribers and is made up from two No. 12 iron rural circuits equipped with No. 46-A repeating coils at the office end and No. 44-C retardation coils at the distant end. The No. 44 coils are located in a suitable box and mounted on a pole about six miles from the central office at a point where the two side circuits diverge, one of which extends two miles and the other four miles beyond the coils in different directions. The physical leg of the phantom, to which all the stations are bridged, is about two miles long.

This phantom circuit has been giving satisfactory service for nearly a year, and is considered by the maintenance force equal in every way to the best physical circuit in the district which has a heavy rural line development.

An installation of especial interest, from the plant engineering standpoint, was completed at Elmira during the year 1914. It involved the placing of about three miles of large gauge, duplex, loaded, underground cable. Elmira is a very important toll and long-distance center, there being 35 American Telephone & Telegraph and 48 local toll circuits terminated in the central office. Prior to the installation of the new cable a large proportion of these wires was carried open through the center of the city, and the effect of their removal has been especially marked. This is the first loaded cable installation made by the New York Company in the Central Division.

During the past year it has been found expedient and economical to establish several of the central offices on an agency operated basis. In the majority of such cases the equipment had to be moved to new quarters which were in general the residences of agents. Since, as a rule, dwelling houses are not designed and built for possible or ultimate use as telephone exchanges, the adaptation of the new quarters to the equipment or vice versa was in some cases interesting. The central offices moved during 1914 were: Canisteo, Watkins, Deposit, Union Springs, Weedsport, and Fayette.

At Canisteo, where the quarters were on the second floor, it was necessary to use the largest room. This was in the middle of the flat and, to segregate the central office equipment, a partition was built through the center of the room, making a hall for connecting the other parts of the house. Here we have a magneto switchboard of two 100-line sections. A new wall type main distributing frame and battery cabinet were installed in the new quarters. After new cabling and wiring were installed the switchboard was cleared of cable, moved, the jacks cleaned and reconnected to new cable, in thirty-nine minutes.

At Watkins the switchboard consisted of one 20-line toll position magneto and four 50-line battery call positions. For some time before the move the two last positions had been dead, for they had previously been used for handling traffic at Montour Falls, New York. At the moving of this office the main distributing frame iron work and dead switchboard arresters were transferred to the new quarters. The dead subscriber sections were moved and reconnected and lines in both offices temporarily bridged, thus the actual cut-over consisted of disconnecting, transferring, and reconnecting the toll section, which was done in eighteen minutes. The change was made from the old quarters, which were on the second floor, to the first floor of the agent's house located two blocks away.

At Deposit the old and new central offices were on second floors, but across the street from each other. Here the switchboard consisted of two 2-position sections of 400 line multiple

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magneto board. A new K-533 framework with arresters was installed in the new quarters instead of the old main distributing frame. Previous to the move the cable was measured, opened up and formed out for connecting at the new main distributing frame. While the switchboard could have been moved en masse through the rear window of the old quarters, the stairways of the new building were found to be too low for entrance. It was, therefore, necessary to split the sections by removing jacks from either one or the other and disconnecting drop wiring at jacks. Notwithstanding the numerous operations necessary the sections were moved separately, reset, and connected together and to the main distributing frame, in less than three hours. The toll section and toll lines were working in their new location in fifty-five minutes from the time of starting the move.

At the moving of the Union Springs equipment, of which the switchboard was one 2-position 200-line battery call section, the switchboard cable was reformed for connecting to the main distributing frame. Here new doors had to be cut and partitions arranged before the new equipment could be installed. Existing doorways had to be widened temporarily for admitting the board. The board was moved about 2,000 feet and the change required only two hours and fifteen minutes.

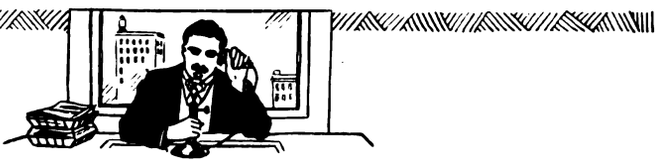
The arrangement of the new quarters at Weedsport was found to be very good for size, but for properly locating the equipment, partitions had to be taken down and relocated. An old main distributing frame was replaced and new switchboard cables installed. A 41-wire American Telephone & Telegraph Company's toll line test panel and extension were strapped out, reinstalled, cabled to the new main distributing frame and toll lines cross-connected through them. The new and old quarters were on the second floors of two adjacent brick buildings, and the wall between them was cut out at the beginning of the work. This saved much time in moving the equipment between quarters. For moving the switchboard a truck was made of "two by fours" provided with window rollers. By this means the switchboard, which consisted of two 2-position 400 line battery call sections, was smoothly and easily moved to its new place. Time, two hours.

The switchboard at Fayette was an 80-line magneto single position section. On account of the small size of this plant it was possible to move most of the old equipment, new switchboard cables and wiring only, having to be provided.

In all cases the time chosen to cut out and move the offices was during the period of light traffic, which usually occurred just after twelve o'clock midnight.

In general, in each case the condition of the plant was considerably bettered and brought up to standard; for example, all battery leads were properly fused; interrupters mounted in vertical positions and provided with operating battery reversing keys; an occasional worn-out pole changer was replaced with an 84 type interrupter; test panels properly terminated on the main distributing frame for cross-connecting purposes to replace the wiring between distributing frame and test jacks; and replacing No. 37-A repeating coils with, and arranging wiring for future No. 46-A coils which are in general the more efficient of the two.

So, while these plants were moved for traffic and commercial reasons, the effect upon the inside plant, especially in connection with the maintenance thereof, will be beneficial.



Short Cuts and Minor Methods

IN nearly all central offices short pieces of cross-connecting wire resulting from disconnections are reused with considerable waste. The wireman will as a rule make sure that the piece of wire is long enough without considering how much too long it may be, with the result that several feet of wire may have to be cut off and discarded.

The Wire Chief's force at Kingston, N. Y., has developed a scheme for re-using cross wire, which has proved both practical and economical. A reduced working plan of the frame to the scale of one inch to the foot has been placed on the wall near the frame. By means of a small rule two measurements are made on the plan, the inches being read as feet. The sum of these measurements is the actual length of the wire required.

A piece of wire of the required length is then selected from one of a row of hooks, each of which is marked and carries a different length, and thus a quantity of wire is kept from going into the waste cross wire box. The board upon which these hooks are mounted is ruled off so that when wires are removed from the frame they can easily be measured and hung in their proper places.

A plan of this kind with certain modifications is adaptable for use with any type frame.

[This is very similar to the plan worked out by the Brooklyn Wire Chiefs and adopted in the Long Island Division, as described in October, 1913.—EDITOR.]

Writing Station Orders in Long Hand on a Homemade Portable Duplicator.

A Simple Time-Saver

THE Newburgh Wire Chief's force writes station orders in long hand on a homemade portable duplicator. By doing this the delay of the usual method of making a memorandum and taking it to the Commercial office to be typewritten, is entirely avoided. In this way the order is received from the source of information and transmitted with the smallest possible number of moves to the man who is to do the work.

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Nineteen-Fourteen—Continued Western Division

In October the number of telephones in service in Buffalo City passed the 40,000 mark, a net gain of nearly 4,000 stations since the first of the year. In Rochester City, the 17,000 mark was passed during November, representing a net gain of over 1,100 stations since January 1. The grand total for the Division passed the 100,000 mark during the month of March.

In September Buffalo City made the largest net gain over any previous month since the first telephone was installed in the city.

In looking over our supply balances for the current year, we find that the standard stock is the lowest in our history and speaks well for the hearty co-operation of all of our forces and particularly of the untiring efforts of our storekeepers who have endeavored to keep their stocks down to a minimum, and at the same time meet all demands.

During the year the Western Division lost one of its earliest pioneers, J. J. Martin, Construction Supervisor, who died October 13, 1914. Mr. Martin had been in the wire service over 42 years.

Submarine cable jobs are infrequent in the Western Division, but the most difficult one yet undertaken by the Cable Department has just been completed. A ten-pair double armored submarine cable, weighing about 16 tons, was placed across the Niagara River from the mainland to Grand Island, a distance of about one-half mile. The current is very swift and difficult landing conditions had to be overcome. The cable had to be well buried in the bottom of the stream to protect it from the ice floes borne down when the ice breaks up in the spring.

During the first ten months of this year the Right of Way Section secured 3,283 permits.

During the past three months a systematic effort has been made to eliminate from our files such work as has for various reasons been held indefinitely. All jobs have been given a thorough tryout and followed periodically until the "Closed" stamp has been affixed to the majority of cases and the papers filed for future reference. This work has been handled by a force that, in point of service, is perhaps the oldest of any Right of Way Section in the employ of the Company. Following is a list of their names with the number of years each has been employed:

J. M. Campion, Right of Way Supervisor, 8 years; M. M. Harrington, Clerk, 9 years; J. L. Little, Agent, 10 years; May E. McDonald, Stenographer, 3 years; C. W. Mackenzie, Agent, 35 years; F. B. Martin, Agent, 12 years; N. S. Price, Agent, 27 years; C. T. Sawyer, Agent, 10 years; J. E. Sigler, Agent, 14 years.

The Western Division is justly proud of its two pioneer Right of Way men, Messrs. Mackenzie and Price, who are sending in the signed permits every day.

John Soderstrom, Division Shop Foreman, Buffalo, completed the 25th year of his service on November 1.

The Contract Order writing offices in the Division wrote during the first eleven months of the year about 80,000 contract orders, and about 7,600 plant orders. Estimating December at the same rate, this will make about 96,000 orders for the year 1914.

As the result of a disastrous fire which occurred in September, in the central office of the Federal Telephone and Telegraph Company, operating in Buffalo, an avalanche of demands for Bell service was met with commendable expedition, and during the months of September, October, and November, the net gain in the city reached the gratifying figure of approximately 1,800. The demoralization of the independent company's service further caused a stupendous overload in the traffic over the lines of this Company and, to meet this emergency, a 5-position board which had been used for exhibition was quickly transferred to the Seneca exchange and connected to the local board.

Among the larger items of pole work completed during the year are:

	Poles
Niagara Falls	367
Tonawanda	518
East Aurora	284
Jamestown	230
Buffalo District Toll	1500
Dansville	130
Rochester District Toll	127
Albion-Holley	137
Attica	229
Garden	163

Large extensions of subway, feeder cable, and distributing aerial cable were made in Tonawanda and Niagara Falls, a striking reflection of the industrial activity of the Niagara frontier.

C. H. Thomas, Division Supervisor of Buildings and Supplies, completed during 1914 his 23rd year of continuous service. The advancement of Mr. Thomas from office boy in 1891 to his present position of responsibility and importance tells its own story of industry and faithful effort, and proves further that the Bell telephone field has its opportunities for those who have the energy to go after them. Mr. Thomas's record shows the following: Started August 12, 1891, as office boy; promoted January 1, 1893, to junior clerkship; January 6, 1896, to assistant cashiership; October 1, 1902, to superintendent of collections; May 1, 1906, to superintendent of supplies; January 1, 1910, to superintendent of buildings and supplies.

Among the more important emergencies recorded during the year are the sleet storm which occurred January 31 in and about Orleans County, and the fire which occurred January 21 in the Ellicott Square Building, Buffalo. The sleet storm necessitated replacement of about 180 poles and about 210 miles of wire. The cost of the work approximated $12,000.

The fire in the Ellicott Square Building was confined to one of the shafts in which were some of the house cables. The cables were burned from the cellar to the top of the 10th floor. Ninety-two lines, serving about 200 stations, were out of service. The fire occurred about 4:00 P.M. and by midnight of the same day new inside wires had been run temporarily from the terminal in the basement, and service was restored at all stations.

Albert G. Pflueger has completed over thirty years of continuous service with the Company, having begun as messenger and night operator at Erie, Pa., in the spring of 1883. The company was known as the American District Telegraph Co., and later as the New York and Pennsylvania Telephone and Telegraph Company. Mr. Pflueger has worked in various offices of the Buffalo District and is now located as Wire Chief at the Tonawandas, where the Company has one of the best-equipped plants in the Western Division. The outside plant has recently been rebuilt with underground and aerial cable, and the central office equipment is also up to date. It consists of an 18-position Western Electric No. 1 common battery board, serving 2,160 subscribers. Tonawanda has had a very good year for new business, showing a net gain of over 200 subscribers. As many as 63 toll circuits pass in and out of this

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office. All of the Buffalo circuits are in underground cables.

L. F. Lang, District Foreman, Buffalo, N. Y., completed his 20th year of service with the Telephone Company on May 31. His service has been with the Traffic and the Plant Departments. Mr. Lang's first position was that of night operator with the Bell Telephone Company of Buffalo at the old Seneca exchange. There were very few stations in those days, there being approximately 1,400 stations, which three men cared for between the hours of 10 P.M. and 7 A.M., also taking care of all the switchboard trouble and testing all lines. After spending five years with the Traffic Department, he was transferred to the Plant Department as assistant wire chief at the Tupper exchange. About one year later he was made wire chief of the Tupper exchange, having changed when the exchange was cut over from magneto to common battery system. Four years later he was made wire chief of the Howard exchange, which position he held for five years. After the Bell Telephone Company of Buffalo was taken over by the New York Telephone Company, Mr. Lang was made wire chief for the eastern section of the City of Buffalo, having charge of four exchanges—Abbott, Crescent, Howard, and Oxford. This position he held until he was promoted to district foreman, having charge of the Lockport District. This district has five common battery exchanges and nine magneto exchanges, covering territory along the Niagara River and Lake Ontario.

The Equipment Installation force in Buffalo numbers among its members three men who, in point of years in service, are among the oldest in the western section of the State:

C. K. Fraser, Chief Foreman of his force, completed his 25th year of continuous service in June of this year. Starting his telephone career as lineman under H. C. Aldrich, he has engaged in nearly all branches of telephone work and has held his present position since June, 1910.

Theodore L. Liesinger, a foreman in the Equipment Installation force, completed his 27th year with the Company during the month of December. In addition to his loyal service to the Company, he has shown his patriotism by a continuous service of over 25 years in the 74th Infantry Regiment of the State National Guard, retiring recently with the brevet rank of Lieutenant.

A. C. Chase, switchboard wireman, familiarly known as "Pop" among his associates, completed his 36th year with the Company in June, having entered the Company's employ during the year 1878. He has, therefore, been engaged in the work of the Telephone Company practically since its inception in this part of the State. Many are the interesting and amusing anecdotes of men with whom he has worked, and of different incidents in the work in the early days, with which he regales us when we strike him in a happy mood.

It is needless to say that all three are enthusiastic members of the Telephone Pioneers Association.

M. F. Glaser, Wire Chief at the North central office, Buffalo, completed his 22nd year of continuous service with this Company on October 12. He entered the Company's employ as night operator at the old Seneca exchange, at which time the telephone development in Buffalo consisted of about 2,100 stations. The lines at that time were ground returned, and he recalls the fact that there were numbers of circuits which could not be used at night on account of noise interference. He served as night operator at various branch offices, as they were opened, until March, 1900, when he was transferred to the Plant Department as assistant night wire chief of the Seneca exchange. Since that time he has served as wire chief at various Buffalo central offices, being at present in charge of the North office, which is the third largest exchange in Buffalo. This exchange serves approximately 3,500 lines and 7,300 stations.

The total number of stations in Buffalo at the present time is about 42,000. This number, compared to the 2,100 stations in 1892, gives a fair estimate of what the Bell System has accomplished in Buffalo during Mr. Glaser's term of service.

Miss Agnes W. Stirling completed her 18th year of continuous service for this Company on May 25. She entered the Company's employ as an operator, being first assigned to the Howard exchange, later being transferred and promoted to supervisor and assistant chief operator at the Bryant exchange, which has been combined with the present Tupper exchange. In April, 1906, she was transferred to the plant department and is at present in the office of the District Equipment Supervisor at Buffalo.

On October 5 E. M. Guillaume, Wire Chief of the Howard exchange, Buffalo, N. Y., completed his 22nd year of continuous service with this Company. Mr. Guillaume began his career with the Telephone Company as an office boy in the general offices at the old Seneca Building, 14 West Seneca Street. In the year 1905 he was transferred to the maintenance department as night wire chief. On November 13, 1911, he was appointed wire chief at the Howard exchange.

An interesting little problem was encountered in the ventilation of the Buffalo Seneca battery room which is on the 5th floor of the 15-story building. Therefore the vents running to the roof are about 160 feet long, probably as long as any in the country. Several methods were experimented with and satisfactory results were finally obtained with an auto-force ventilating cowl installed at the highest point of the building, and piped to the battery room vent.

This Division now has 696 private branch exchanges, 71 lamp, 262 magnetic signal, 200 monitor, 152 interconnecting, and 11 pay station boards.

Regarding private branch exchange work handled by the Plant Department this year, special mention may be made of two boards installed, one for the New York Central, and one for the Lake Shore Railroad Company, Buffalo. These boards were both of special lamp type with two positions, arranged with universal cords to give service over Railroad Company's magneto lines in connection with central office trunks and common battery extension lines.

For the New York Central at Rochester, the Western Electric Company installed a three-position multiple board of similar type. These equipments constitute a new departure in this Division and greatly improve the Railroad Company's telephone service.

There were several special features met with on the replacement of pole sets for the International Railroad Company in Buffalo. Over 100 sets, principally of common battery type, were installed for use on their dispatching system. These sets are mounted on the iron poles which support the trolley wires and some difficulty was encountered in mounting them so as to avoid interference with transmission, consequent on vibration from passing cars.

During the early part of the year the work of the Traffic Inspection Department and of the Division Traffic Engineering Department was com-

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bined, all of the work being placed under the supervision of the Division Traffic Engineer.

The public telephone and private branch exchange inspection work was transferred in May to the supervision of the Manager of Schools. During the year practically all private branch exchanges were visited and friendly relations established with the private branch exchange attendants. The inspection work has been productive of close co-operation between central office operators and private branch exchange attendants. The private branch exchange attendants at Buffalo and Rochester were invited to attend meetings arranged by the Public Telephone Department, at which papers were read impressing upon the attendants the desire of the Company to co-operate with them in their work.

On January 10 the East Aurora Commercial Office moved to its new quarters and the office was thrown open for public inspection on that night. A telephone lecture, supplemented by motion pictures, was given and Elbert Hubbard spoke, accepting the progressiveness of the Company and its tribute to the East Aurora community.

In the Buffalo Corn Exchange a special table with glass compartments for brokers' extension telephones was installed and assisted in securing a number of new contracts.

During the year 854 anniversary payments were made to the operating force. Of this number 152 were $100 payments. Below are pictures of the operators in Buffalo and Rochester who completed their seventh year of service during 1914, which entitled them to an anniversary payment of $100.00.

Out of a total of 1,442 operators seventy-five resigned during the year to be married.

Miss M. J. Gannon, Manager of Schools, Buffalo, completed 34 years of service in November.

Miss R. McCall, Chief Operator of the Rochester School, completed her 23rd year of service with the Company in April.

Miss M. C. Wait, Chief Operator at the North central office, completed her 25th year of service with the Company in October.

Miss M. L. Law, Evening Chief Operator at Seneca, completed her 15th year of service with the Company in March.

Buffalo Operators Who Completed 7th Year of Service in 1914. Left to Right, Standing: Misses L. Meegan, A. Reidy, M. Kepfer, M. Griffin, M. Sheehan, E. Pierstorf and C. Bihler. Seated: Misses E. Sainsbury, G. Hynes, O. Hassey, E. Daly and H. Kluge.

Miss C. G. Collins, Chief Operator at the Buffalo Toll Board, completed her 26th year of service with the Company in January.

Miss Anna Wakelee, Information Operator at Olean, completed her 16th year of service with the Company in May.

On February 2 the Telephone Building in Buffalo was thrown open to the public. The first week was known as "Bell Week." On the opening night Mayor Fuhrmann and H. A. Meldrum, President of the Buffalo Chamber of Commerce, talked by telephone to the Lieutenant-Governor of Colorado at Denver, before the heads of almost every city and county department, and many of the prominent business men. Throughout the rest of the week, thousands of Buffalonians inspected the building. The sixth floor of the building was fitted up for educational and entertainment purposes, and has proven one of the most successful advertising mediums ever attempted.

Rochester Operators Who Completed 7th Year of Service in 1914. Left to Right: Misses M. Connerton, R. Komenski, P. Skinner, M. Gartland and J. Wolfe.

In June the Plant Department completed the new aerial plant in East Aurora, removing thousands of poles, cross-arms, temporary constructions, etc. The new work gave an entirely new aspect to the town and many complimentary comments were made by the East Auroraians.

In June the Plant Department completed an extensive new cable plant in North Tonawanda and immediately upon its completion an intensive canvass was started, resulting in considerable new business.

In July the new La Salle theoretical exchange was opened.

Miss Rozalind A. Cheney completed her 25th year with the Company on October 10. Miss Cheney, at present Assistant Cashier in the Buffalo Local Office, was employed by the A. T. & T. Co. in 1889 as operator and has since been continuously in the service. She is a Pioneer. In 1901 Miss Cheney was the Chief Operator of the central office in the Electrical Building at the Pan-American Exposition. She was the first operator to transmit by telephone the information that President McKinley had been assassinated.

Frank B. Preston, now attached to the Buffalo Local Office, has a record for continued service over a period of thirty-three years. He is still a young man.

Six Bank Collection Agencies were established as follows: Akron, Arcade, Barker, Middleport, Springville and Wilson.

A contract was awarded in January for a three-story addition to the Company's building on East 3rd Street. The new addition provides space for new central office equipment, both local and toll, new terminal room, and Wire Chief's quarters. All departments of the Company will occupy space in the new building.

The City of Niagara Falls is probably the most active of its size in the Western Division, and in order to care for the increasing business, the outside plant in the city has been almost entirely rebuilt during the past five years. The work was practically completed during 1914. A new central office building has been erected

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Niagara Falls

Rochester

in which a new No. 1 Commercial Battery board has been installed. This equipment was scheduled to be cut into service January 9, 1915. The cable work for the cut-over is now completed. Two of the seven new cables in this exchange are 900 pair. During the past five years the original 2,700 stations in the city have increased to approximately 4,400, or an increase of about 63%.

An addition to the Jamestown central office has recently been completed which provides for two new operating rooms. It is planned to install a new local and a new toll board. The local switchboard will have a capacity of about 10,500 subscriber lines; the initial equipment provides for fifteen operators' positions and 1,700 subscriber lines. The toll board will consist of fourteen positions with provision for further extension to a total of thirty positions. It is expected that the new equipment will be cut over about March 20, 1915.

December 5 the new Crescent exchange in Buffalo was placed in service. This is the first new exchange in the Western Division in which 900-pair cable is used, although earlier in the year a 900-pair cable was terminated in the existing Tupper exchange. The Crescent central office equipment was installed during the year by the Western Electric Company in a newly completed building. Few cut-overs have advantaged a central office more than this. The old equipment was on

Crescent, Buffalo

the third floor of a flatiron shaped apartment house with the power plant in the basement. The switchboard was of local manufacture with 1,500-line capacity. The new equipment is of Western Electric No. 1 10,500-line type.

The Holland central office was moved on September 30 to new quarters on the second floor of the Wurst Building. A new one-position magneto switchboard was installed at the new location. Service is rendered to 168 stations over 31 lines.

An addition was built during the year to the Rochester Main building. The addition provided room for a new local and a new toll board. The boards were cut into service on the evening of October 17. The new local board has a capacity of 10,500 subscriber lines, 8,500 subscriber lines having been in service at the time of the cut-over. The toll board has a capacity of 320 lines. A 16-position desk was also installed for handling information calls. At the time of the cut-over 759 stations bearing Main designations, which were formerly served by the Genesee office because of the congestion of the former Main switchboard, were cut into the new switchboard.

The underground cable work in connection with the Rochester cut-over on October 17, was the largest job of its kind completed in the Division during the year, twenty-two maximum sized cables being involved.

The Barker central office was moved to new quarters in the Somerset National Bank Building on June 9. The equipment at Barker consists of three magneto positions serving 63 lines and 334 stations.

A rapid growth of subscribers in the Oxford District made necessary extensive changes in the Oxford office. At the time of writing the Oxford building is being remodeled and a large addition is being built. The first floor will be arranged for additional operators' quarters and the

New Addition to the New York Telephone Company's Building at Jamestown, N. Y.

Barker

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space on the second floor arranged for an enlarged operating room. The work of installing four additional "A" sections, one "B" section and 1,000 multiple jacks is now under way and it is expected that this equipment will be in service next spring. The addition will provide a complete and ideal central office, attractive quarters for operators, and a well-laid-out operating room.

On October 1 our Seneca exchange passed the 10,000 station mark. This exchange was cut into service June 21, 1913, with 3,945 lines and 9,317 stations, and has had a steady growth. Seneca has 290 private branch exchanges caring for the down-town business section of Buffalo. The toll and long distance boards are also located at this exchange with 259 circuits. Our Tupper exchange will, according to the present growth, pass the 10,000 station mark by April, 1915 (at least we hope so). The North exchange should reach the 7,700 station mark by February 15. The Abbott exchange, with a new addition to the switchboard, has 2,177 stations, and is sure to grow. In talking about this exchange we should state that we have the longest line in the world that is being worked over machine ring trunks. This line runs up the Lake Shore Road and is 21 miles long.

In July the Howard central office in Buffalo was practically cut over, the underground cable being transferred from the old to a new main frame, while the existing switchboard was kept in service. Additions to the central office equipment were made, and the old Howard Building was enlarged.

On August 22 the Akron central office was moved to new quarters on the second floor of the Wickware National Bank Building. The bank building is of recent construction and is one of the best business buildings in Akron. The switchboard, which is of the No. 9 type, consisting of one toll and two local positions, was moved from the old to the new location without interruption to the service.

In July a new high mark was reached for stations at Lakewood, a season resort on Chautauqua Lake—178 compared with 154 at the height of the season in 1913.

Miss Jennie I. Howard, Chief Clerk and Stenographer in District Manager L. J. Davey's office, has been in the employ of the Bell Company twenty years—since September 18, 1894, always filling the same position. During that time she has given faithful and conscientious attention to her duties. She has seen the Jamestown exchange grow from 325 stations in 1894 to 2,791 at the present time.

E. H. Allen, Local Manager, Olean, completed his sixteenth year of continuous service with the Company on July 3.

August 2 Charles T. Earley, Manager of the Olean District, died. Mr. Earley was born at Scio, N. Y., August 1, 1862. He had been connected with the telephone business for over twenty-five years. He was appointed Manager at Olean in 1902. At that time the Olean office had about 440 subscribers. Under Mr. Earley's efficient leadership the number increased to 2,200.

At the present time the Company is installing underground conduits along the east side of North Union Street, south to West Henley Street and west on West Henley Street to 2nd Street. The purpose of this work is to relieve congested conditions in the west end of the city. A new 600-pair cable will be placed in the underground construction. It will be the first cable of that size installed in the Olean plant.

Following the installation in Gowanda, late in the year 1913, of a six-position common battery switchboard equipped for four party selective service, all of the equipment of some 500 subscribers was standardized. The plant was entirely rebuilt and cables in the business section placed underground. Three private branch exchanges were installed in January, which is a fair number considering that Gowanda has a population of only 2,800.

Clayton Witherell, of Gowanda, will complete his eleventh year in the interests of the Bell Company January, 1915. He was first employed as night operator and worked day times doing plant work. He is at present Wire Chief of the Gowanda Local District, having the safe-keeping of the wires in four towns under his supervision.

A 100-line magneto switchboard was installed at Cherry Creek, N. Y., in January.

An article appearing in the June issue of THE TELEPHONE REVIEW in regard to a trip through the Jamestown District was printed in the Gowanda papers. Business men were greatly pleased with the space devoted to Gowanda. We received such a number of requests for copies of the magazine that it was necessary to secure an additional supply.

Dunkirk, N. Y., passed the 800 mark in station count in May.

A new intercommunicating system was installed for the Dunkirk Printing Company in September.

Forestville, N. Y., passed the 200 mark in station count and Silver Creek, N. Y., the 450 mark, in November.

The Silver Creek exchange was opened July 1, 1913, and at that time the Forestville exchange had but 60 subscribers. The conditions under which the exchanges were built are still fresh in the minds of THE TELEPHONE REVIEW readers. Employees of all departments promptly answered the call for "top speed" when the residents of the two localities called for Bell service and as a result that section of the State is prominent in the Bell column.

Five years ago this month a canvass was started at Salamanca. At that time there were ninety-three stations working on the exchange; to-day there are 988, a net gain of nearly 1,000%. Five years ago there were ninety-nine poles in Salamanca, including toll pole lines. To-day there is underground all through the business section, and aerial cable throughout the residence section. The office and office equipment are also up to date.

Miss Grace Gress, cashier, completed her sixteenth year in the Company's service last July. She has been employed in the Olean and Salamanca offices during the greater part of this time and her large circle of friends is the best testimony of the efficient manner in which she has handled this difficult position.

On December 1 the collection office, located in the Bank Building at Webster, N. Y., was discontinued, as a result of an arrangement made with the banking firm of Jayne & Mason, to handle our collections.

Arrangements were made with the First National Bank at East Rochester, N. Y., to accept payment of New York Telephone Company bills, effective December 1.

Arrangements have been completed for the discontinuance of the Collection Office at Avon, N. Y., on December 31, and effective January 1, 1915, New York Telephone Company bills will be payable at the State Bank of Avon.

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The Big Restoration Job of 1914

SEVERAL issues of THE TELEPHONE REVIEW contained partial descriptions or summaries of the damage done to the New York Telephone Company's plant by the heavy snowstorms which occurred during last March, and of the heroic efforts made by the employees to restore and render service. Of course the actual restoration of service was completed in a short time, the majority of subscribers whose telephones were interrupted having their service restored in a very few days, and service in the sections where the damage was heaviest having been restored in a few weeks at most. In a number of cases, however, the damage was so extensive that it was either impracticable or impossible to attempt the permanent restoration of the plant on such short notice, and in these cases only such temporary measures were taken as were necessary to restore service and remove dangerous conditions; the permanent or final restoration was not undertaken until studies had been made to determine the proper type and size of construction which should be used. It is due to this fact, therefore, that more than six months' time was required in clearing the major portion of the damage to the plant, and the entire work has not yet been completed.

The first estimates of the damage to the telephone plant in the upper half of New Jersey and in the southeastern section of New York were soon found to be entirely too low, and as the work is now nearing completion it is seen that the gross damage exceeded one million four hundred thousand dollars in cost, or probably at least three times as much as the first estimates. The figures below show the approximate number of stations which were put out of service and the principal work necessary to restore the plant to normal and satisfactory condition, with the gross cost of the work in the various divisions, and it is probable that they will give a somewhat clearer idea of the extent of the damage than any previous summaries or descriptions which have appeared:

Division	*Interrupted by Storm*	*Principal Units of Plant Required to Restore Plant to Satisfactory Condition*				*Estimated Gross Expenditures for This Work*
		Poles	*Crossarms*	*Miles of Wire*	*Feet of Cable*	
Manhattan-Bronx ...	1,200					
Westchester	1,500	190	....	60	47,000	$108,000
Long Island	2,000	85	10	215	17,000	32,000
New Jersey	39,000	3,430	8,690	14,915	160,000	1,145,000
Hudson	4,700	900	1,200	1,285	.....	128,000
Total	48,400	4,605	9,900	16,475	224,000	$1,413,000

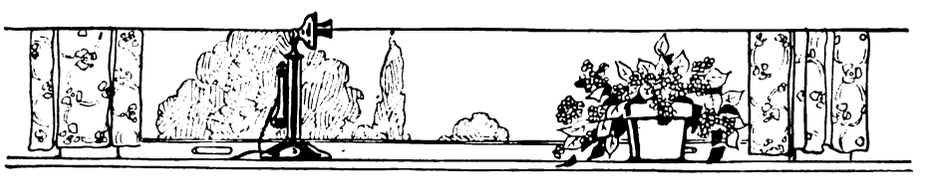
It will be seen that the New Jersey Division bore the brunt of the damage, although in the other divisions it amounted to more than a quarter of a million dollars and affected approximately 9,400 stations.

The final restoration work includes the placing of cables in several sections to care for the existing circuits which were damaged and for the estimated growth of both subscriber and trunk lines for several years. In addition the cable construction will greatly decrease the danger of future interruptions to the service on account of storms or other unusual conditions.

In the New Jersey Division during the first week, ending March 7, 21,020 stations were put back in service; 13,187 during the next week; 2,154 additional by March 30.

The entire Plant Department, assisted by 330 men sent in to help from the other divisions, commercial employees, and others, were required to do this remarkable piece of work.

The catastrophe served to display the wonderful intrepidity of the men and women of the Company who had to cope with the storm in rendering and restoring service, and the splendid consideration and appreciation on the part of the public towards the Company while such heroic efforts were being made to establish normal conditions again. This is equally true in each of the divisions, and once more the most generous recognition is given them all.



Ten Little Helpers

By John A. Straley, An ex-Installer's Helper

The Humor of This Will be Appreciated by Anyone Who Has "Carried the Bag"

Ten little helpers, standing in a line;
One jawed the Big Boss, then there were nine.

Nine little helpers, in the office late;
One said he didn't care, then there were eight.

Eight little helpers, got a raise, thank Heaven;
One cut a party line, then there were seven.

Seven little helpers, up to all the tricks;
One took an hour off, then there were six.

Six little helpers, glad to be alive;
One lost his orders twice, then there were five.

Five little helpers, boring through the floor;
One bored a cablesheath, then there were four.

Four little helpers, happy as could be;
One lad went out alone, then there were three.

Three little helpers, wondering what to do;
One took some heat-coils out, then there were two.

Two little helpers, the day was nearly done;
One left the job at four, then there was one.

One little helper left, clever and unique.
He's an installer now, fifteen a week.

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The Telephone Situation at the Edison Fire

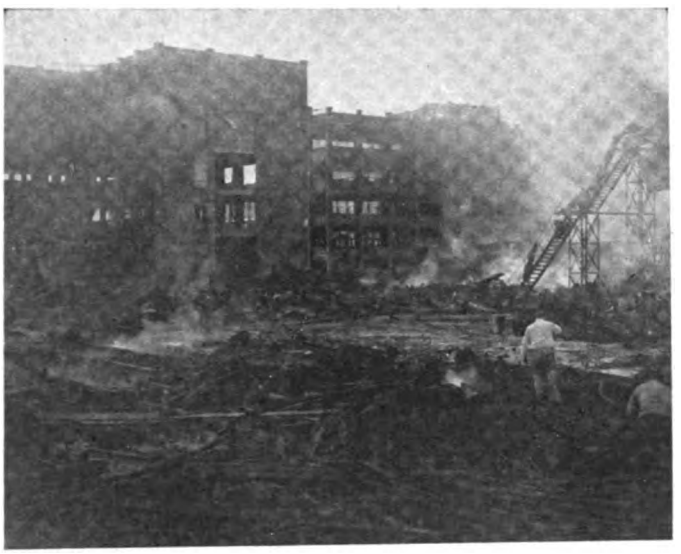
A LARGE part of the Edison Company's plant at West Orange, N. J., was destroyed by fire, December 9, when an explosion occurred in the film testing room at 5:21 P. M., starting a conflagration which extended to ten other buildings. Besides 150 members of the Edison Fire Department who responded to the alarm, fire fighters of West Orange, Orange, Newark, Montclair, Bloomfield, South Orange and East Orange were required before the flames were brought under control at 11 P. M.

The original building of the plant, erected in 1887, and the one in which Mr. Edison's inventions were conceived and developed, contained the personal library of the inventor, the first phonograph, and primitive storage batteries, as well as the experimental laboratory. Many valuable records and models were removed to safe places when this building was threatened by the flames, but strenuous efforts to save the structure were finally successful.

While the fire was in progress, employees of the Edison Company set up a moving picture machine to snap the big blaze, and the pictures have already been shown in the different theatres of the Oranges. The Edison Company men were not the only ones, however, who were on the job at this critical time. The telephone situation during and immediately after this great fire which destroyed property valued at a million dollars, and threatened scientific achievements of far greater importance, affords the usual example of proficiency in bringing aid while the emergency lasted, and in speeding the work of recovery.

The telephone system of the Edison plant consisted of three 90-line switchboards, 192 extension stations, 8 trunk lines to the Orange exchange, a tie line to New York City, an extension line to Silver Lake, N. J., one coin-box telephone, and three individual message rate lines. As soon as the fire started, the Telephone Company men took in the magnitude of a situation in which one of the greatest electric manufacturing plants in the world, employing 3,254 persons, seemed on the point of destruction. Preparations were immediately made to install emergency service to take the place of that which was sure to be destroyed in the great fire. The Local Commercial Manager at Orange assured the officials at the Edison plant, when the fire was hardly more than started, that the telephone service would be properly arranged for, and the Newark District Plant Superintendent took the necessary steps at once.

At 7:45 P.M. a coin box public telephone was the only instrument working in the office building. The Fire and Police Departments were notified that this was in service, and they made the most of it. The only other telephone in the plant which was still working after the switchboard was cut out of service about 6:30 P.M., was in the Storage Battery Building, which escaped the flames. This station received all the calls for the Edison plant over night.



The Edison Works in Flames. December 9, 1914.

In the face of these conditions, the telephone men worked like beavers to restore adequate service. Six thousand feet of No. 17 twisted pair outside wire were run to connect the trunks, tie lines, and outside extension stations, and 12,000 feet of No. 19 twisted pair inside wire were necessary for connecting stations in the buildings. At 5:00 A.M. the morning after the fire, a 90-line switchboard and instruments were delivered from the Central Storeroom in Manhattan to the Edison plant, and by eight o'clock that morning eight trunk lines to the Orange exchange, one tie line to New York City, one extension line to Silver Lake, 65 extension stations, and three message rate lines were in operation to help the Edison Company renew business. At ten o'clock the same morning the Edison Company requested another 90-line switchboard, and by 2:00 P.M. of that day it was in service, with additional extension stations.

The conduct of the operators during the fire, both at the Edison switchboard and in the Orange central office, was characterized by the usual coolness and masterliness with which the operators proverbially meet great emergencies. The Misses Mattie Rooney, Annie Hanley, Bertha Messenger, and Marion Brennan remained at their posts at the Edison board, communicating with the heads of the different departments, summoning aid for the fire department, and in every way doing their utmost to hasten the work of controlling the fire. Fourteen minutes after the fire broke out, two of the Plant employees of the Telephone Company were beside the four girls at the switchboard. The lights were all out so matches and candles had to be used. The girls worked at the switchboard until over an hour after the fire started, when the building in which the switchboard was situated began to be blistered by the flames. The switchboard was covered with rugs from the floor, and after the fire was over was found to be uninjured except for temporary damage caused by water.

In the Orange central office the operators responded nobly to the demand of the heavy traffic incident to the fire. The registered O. K. calls between 6 and 7 o'clock numbered 5,468. The normal load for the hour is 1,900 registered calls and the normal evening "busy hour" load is 2,500 calls. The tremendous increase of traffic may be comprehended even more clearly from the fact that 26 people are enough to handle the evening "busy hour" traffic, but on the night of the fire 50 people were necessary. Many girls who had finished their work returned to the board; five Montclair day operators went to the Orange office and volunteered their services, which were gratefully accepted. The South Orange and Arlington Chief Operators also reported and assisted the Orange Chief Operator. The Market Chief Operator offered the services of as many operators as necessary, but with the force on duty at that time, the Chief Operator at Orange felt she could handle the traffic satisfactorily. The work performed by these young ladies

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speaks for itself. Only habitual faithfulness and sincere effort could produce such an example of efficient service.

Mr. Edison himself felt impelled, in the midst of the disaster, to write Mr. Bethell the following letter:

FROM THE LABORATORY OF
THOMAS A. EDISON
Orange, N. J., Dec. 17, 1914.

Mr. U. N. Bethell,
President, New York Telephone Co.,
15 Dey Street,
New York City.

My dear Mr. Bethell:

I'm fond of a hustler and I like to give them credit when I find real ones.

Your Company is entitled to a real good word along this line. We were well taken care of, and our telephone system here was in working order by 10 o'clock of the morning following the fire on Wednesday night of last week. It was splendid work and I want to compliment you on it and thank you for such prompt service.

Your Mr. H. G. Kerr, Division Commercial Manager, Mr. L. C. Hall, District Manager, and Mr. Brant, Local Manager, were right on the job, bright and early.

Yours very truly,
(Signed) THOS. A. EDISON.

Mr. Bethell replied as follows:

December 21, 1914.

Mr. Thomas A. Edison,
Orange, N. J.

My dear Mr. Edison:

I am very much obliged for your letter of December 17th.

Together with your other friends, I was greatly shocked at the great misfortune which came to you, and am very pleased to know that those in our organization, who could be of assistance, were ready and anxious to aid you in every possible way.

It will give me great pleasure to see that your kind letter reaches the men who, as you put it, were "on the job, bright and early."

Very truly yours,
(Signed) U. N. BETHELL.

A letter from Mr. H. T. Leeming, Purchasing Agent of the Edison Phonograph Works, dated December 22, stated:

"We are extremely grateful to you for the excellent manner in which you took care of our requirements for telephone service after our disastrous fire. . . . As fast as wires could be strung the different departments were given service, and this service has been of the best ever since that time, though under adverse conditions. Some departments have used the telephone almost constantly since the fire owing to the urgent needs of our business and our endeavor to get things moving quickly, which made it necessary to operate the boards day and night."

Patchogue Commercial Meets an Emergency

A FIRE, starting next door to the Patchogue Commercial Office, about 1:30 P.M., November 30, immediately broke through into the office, where Miss Robinson, cashier, Mrs. Ross, stenographer, and Mr. Kattau, chief clerk, were at work. Their first thought on seeing the flames shooting half across the office, and the blinding smoke, was to save the records. The Local Commercial Manager arrived at this juncture, and with the assistance of Miss Robinson and Mrs. Ross and a few by-standers, managed to have the card record, toll check, and file cabinets removed to the street, while Mr. Kattau and others worked a bucket brigade to keep the flames in check so the records could be removed. Miss Robinson and Mrs. Ross finally consented to leave the office. Mr. Lightbody, Mr. Kattau and Mr. Lowden, Resident Engineer, with the assistance of by-standers, then removed the furniture from the office, having to lift each piece over the counter. Twenty minutes after the fire started every piece of furniture except one desk in the cashier's cage had been removed to the street.

The most immediate necessity was a temporary office, and through the kindness of Mr. Huttenlocher, a photographer, a temporary office was opened in his gallery, opposite the scene of the fire. Thirty minutes after the fire broke out the Commercial Office was ready to do business in this new location.

As it was the last day of the month, payments had already been telephoned to Brooklyn, and it was absolutely necessary to make the deposit. Miss Robinson transferred her records to the Town Clerk's Office near by, and while furniture was being placed in the temporary office, she made up her deposit which was properly taken to the bank by 2:30 P.M.

Thanks to the splendid co-operation of Mr. Sonner, District Foreman of the Plant Department, all instruments were recovered from the fire and two lines were run to the temporary office by 2:15. Mr. Huttenlocher had service in his studio, and the operators transferred calls to this line while the temporary lines were being connected.

Enough cannot be said for both the Plant and the Traffic Departments for their hearty co-operation throughout this trouble.

On December 4 the regular office had been remodeled and business was again being done in the old quarters. —F. LIGHTBODY, Local Commercial Manager, Patchogue, L. I.

Another Record Re-establishment of Service

AT the fire which destroyed the McAllister shipyards at West New Brighton on December 16, the N. Y. Telephone Company again evinced its ability to handle an emergency expeditiously. The lines and instruments used in the ship building plant were destroyed, but a temporary office, which was taken up in a small building on the piers, was soon fitted with telephone equipment and communication was established before the fire was out. As a result of this promptness the Manhattan office of the concern was kept informed of the progress of the fire as it occurred. An appreciative note of thanks was received from the firm, complimenting the men who extended the wire and installed the instrument, upon their prompt and efficient service.—G. J. HAFSTROM, Local Commercial Manager, S. I.

"Central Responded at Once"

"ON the eve of Christmas, when we are all wishing one another a happy time on the morrow, it occurs to me that it is well to return thanks for one of the good things, at least, which we might have lost but for one man's quick thought and the facilities at his hand to carry it out." With this introduction, Mr. John C. Storms, Editor of the Park Ridge (N. J.) *Local*, writes our Hackensack office under date of December 24 regarding a fire which occurred in Park Ridge a few mornings previous. He continues: "Fire broke out in a building on Railroad Avenue within ten feet of the office in which John J. Allen was sleeping. It seemed as though nothing could save his place and everything else on that block and the surrounding ones. . . . Seizing the telephone on his desk he cried, 'Call the firemen,' and then began to get his things to a safer place. 'Central' responded at once, the firemen were summoned, and took prompt action," with the result that comparatively slight damage was suffered.—G. H. HOWELL, Local Commercial Manager, Hackensack, N. J.

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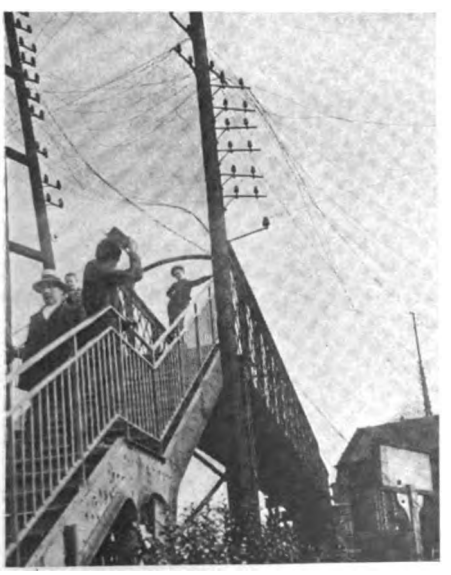
Telephone Incidents of the War

German Outpost Reporting to General Staff Near Verdun.
Copyright A. P. A.

IF the telephone had existed in Napoleon's day the world might have been spared the present European conflict. In this struggle the uses of the telephone are practically numberless, but the greatest interest probably lies in what it accomplishes on the firing line.

Mail advices from London say that during Gen. Sir John French's recent visit home the operations of the British army in Flanders were directed by telephone for three days from the army chief's home near Hyde Park, London, whence he was able to communicate directly with the base headquarters at St. Omer, France.



Telegraph Wires Cut at Belgian Frontier Station. The Station Master Is Said to Have Been Shot Dead on His Refusal to Cut the Wires. *Copyright I. N. S.*

When Gen. French reached Folkstone he was met by Lord Kitchener. They motored to the home of Premier Asquith near Deal, where there was a council of war.

Then Sir John went to London and attended other councils, at one of which the King was present. His nights were spent at his home, where he held hourly communications with Sir Archibald Murray at the front over a direct telephone wire.

An American war correspondent, viewing the telephone exchange of the German army in the French city of Laon, states that he saw twelve soldier operators, sitting before portable switchboards, with metal transmitters clamped on their heads, giving and taking messages to and from all the corners of the mid-battlefront. Given an hour's notice, these men could disconnect the lines, pull down and reel in the wires, pack the batteries and the exchanges, and have the entire outfit loaded upon automobiles for speedy transmission elsewhere.

In the German artillery trenches orders and instructions are sent almost exclusively by telephone, the soldier attending it lying face downward and calling out instructions for firing, giving the range and the distance.

In neither the German nor the Allies' army can the gunners see the enemy, but they train their guns on the target by laying them at a fixed angle with some definite visible point. The Captain goes to a point from which he can see the enemy, and has a telephone line run out to him from the battery. Watching the fall of the shells, he telephones in the necessary corrections.

Of the British soldiers it is reported that the men in the front trenches are able to listen by the aid of field telephones to gramophone concerts being enjoyed by soldiers in camp eight miles in the rear.

A recent dispatch from Petrograd says that one day during a change in position the Russian troops in hundreds passed by a man in a soldier's uniform, lying in a ditch, where he complained of rheumatism but refused aid. Finally a Cossack patrol came along and, one of the Cossacks, suspecting that the man might be a spy, struck him with a whip. At this he leaped to his feet, revealing a telephone over which he had been telling the Germans of everything that had passed along the road.

The London *Times* quotes a report of an Austrian lieutenant who discovered three Russian peasants under a heap of beetroots telephoning all the movements of the Austrian troops in the vicinity to their colleagues.

Belgian Using Field Telephone.
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The TREND of REGULATION

Deposits and Minimum Charges Approved

IN the recent case of Caulffiel et al. v. Citizens' Light, Heat & Power Co., the Pennsylvania Commission held that the regulation requiring customers who are not property owners or who have not in some manner shown their ability to pay for service, to deposit $5.00 before the installation of service, is a reasonable regulation, and that the regulation requiring a minimum monthly charge of $1.00 for electric service is reasonable.

The New Jersey Commission in the Unger v. Acquackanonk Water Co. case, on December 7, 1914, held that in considering that portion of the complaint relating to the minimum charge exacted by the Company, such a charge was proper. The Board further called attention to the fact that the principle of a minimum charge by a public utility had previously not only been approved by the Board, but had been uniformly recognized by other commissions.

Complainant Must Establish Prima Facie Case

IN the case of Unger v. Acquackanonk Water Co., decided on December 7, 1914, by the Board of Public Utility Commissioners of New Jersey, the Board held that proof that the water company had declared large dividends on its capital stock during recent years was not of itself competent evidence that its rates were unfair and that an appraisement of the value of the property by the State Water Supply Commission could not be accepted in evidence, because the water company would be unable to test its accuracy by cross-examination of those who made it, or to ascertain the basis upon which it was made. The Board further held that when a complaint is brought by an individual challenging the justice and reasonableness of a rate schedule in its general application to the people of a community, and when the schedule so challenged does not appear prima facie to be unreasonable, efficient administration of the powers conferred upon the Board and of the funds entrusted to it requires that before the Board proceeds to conduct on its own motion an expensive inquiry, the complainant should so support his challenge as to raise a fair presumption that the public interest requires immediate action by the Board.

Burden of Proof

THE Pennsylvania Supreme Court in the case of Mechanicsburg Borough v. Mechanicsburg Gas & Water Co. held that it was to be assumed that the water company in forming its schedules of rates had been guided by some rule which would enable it to be just to itself and, at the same time, secure uniformity of cost to consumers, and that the presumption was that the rates were reasonable both as to the compensation of the Company and as to the charge to be paid by the consumer, and the burden of showing the contrary was on the party alleging it.

The Court further held that as the plaintiff furnished no evidence establishing the unreasonableness of the rate, the presumption of reasonableness must prevail. The evidence offered by the plaintiff, showing rates for domestic and industrial service in other boroughs, was properly excluded, and that similar evidence as to the rates for fire service in other boroughs was properly disregarded by the court below in view of the fact that no evidence to show a similarity of conditions in those boroughs to the conditions in the plaintiff borough had been adduced.

Franchise Value Not Determined By Cost. Full Value Must Be Allowed

THE Court of Errors and Appeals, the court of last resort in New Jersey, by a narrow majority of six to four, filed a decision on December 9, 1914, in the case of the Public Service Gas Co. v. Board of Public Utility Commissioners et al., reversing the decision of the Supreme Court and the order of the Board of Public Utility Commissioners because the Commission and the Supreme Court had refused to allow a substantial value for the franchises of the gas company. In all other respects the Court of Errors and Appeals agreed with the decision of the Supreme Court and affirmed its judgment, but inasmuch as the estimated value of the property fixed by the Commission and confirmed by the Supreme Court as a basis upon which the Company was entitled to earn an eight per cent. (8%) return, did not include any allowance of value for the franchises in question, the Court held that such basis was erroneous, reversed the judgment of the Supreme Court and directed that the order of the Commission fixing the 90c rate be set aside. The Court laid great stress upon the fact that the franchise was considered property for taxing purposes, and that if it was considered property for one purpose it should be considered property for all purposes, including a basis for rate-making. The Court of Errors and Appeals approved the finding of the Commission and the decision of the Supreme Court that eight per cent. (8%) on a reasonable valuation was proper and that a going concern value of $1,025,000 was fair.

This decision by the Court of Errors and Appeals is at variance with the commonly accepted view of the Commissions, the general theory heretofore having been that (as was recently set forth in the decision of the Greencastle Water Works Company case, before the Public Service Commission of Indiana), "if a sale of the property is in contemplation the franchise might have great value. In a rate-making valuation it should not be valued beyond actual cost to the utility. Except as to any sum paid for the franchise, it is the donation or investment of the public in the enterprise and should not be capitalized against the public."

Application has been made for a re-hearing and the newspapers express the opinion that the application will be granted.

Why Chelsea 3530 Didn't Answer. —*Life.*

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Main Society

THE 156th meeting of the Telephone Society of New York was held at the United Engineering Building, No. 29 West 39th Street, on Tuesday evening, December 15.

The Secretary reported that seven applications for membership had been received since the last meeting. These applications having been approved by the Membership Committee were put before the Society for vote and the applicants were unanimously elected.

The President then introduced N. C. Kingsbury, Vice-President, American Telephone & Telegraph Company, who read a most interesting paper on "Publicity."

After the applause which followed Mr. Kingsbury's address, Mr. Thurber made a few remarks. Gerard Swope also spoke of the great effect of advertising.

The meeting then adjourned to the fifth floor, where with music and cigars a pleasant hour was enjoyed.

Mr. Kingsbury said in part:

From the very dawn of concerted human activity publicity has been employed to influence human minds, and in our own times it has become recognized as the great, almost universal, method of enlightenment. The development of that form of publicity which we call advertising is one of the very remarkable things in this age, and the necessity for advertising, from a business standpoint, seems to be growing.

The kind of publicity which has given the old word a new meaning is that which has for its object the formation and control of public opinion. The world to-day is ruled by public opinion. More and more must we appeal to the people, not only in governmental affairs, but in business affairs, and the people must answer the appeal and assume the responsibility to a greater extent than ever before for the conduct of business. Our laws have always considered industry, trade and commerce as matters of private concern. American jurisprudence has made a distinction between political and public affairs on the one hand, and commercial affairs on the other hand.

Until within a few years no one has seriously objected to that distinction. But a new doctrine has developed as the result of changed commercial conditions and the growth of many industries to colossal proportions. Therefore, public service corporations have welcomed federal and state commissions having almost inquisitorial powers. Public opinion also must be kept fully informed by various methods of publicity so as to prevent the distrust and suspicion with which many business interests have been regarded in the past.

The relationship of corporations to social welfare is so intimate and so vital that the public must and will know all about the corporation, and it is the function of government, which is developing at an almost alarming rate, to gather the information and disseminate it to the public. There should be no taking of sides as between the corporation and the public, and the only way to avoid this is to turn the light of publicity on corporate affairs.

In the matter of government ownership, as in other matters, it is not our policy to set ourselves in opposition to the expressed wish of the people, but we do believe that it is our duty to let the people know just what is involved in the proposition of government ownership. In other words, our problem is one of publicity. The facts are with us, and both the facts and figures used by the advocates of government ownership are easily shown to be incorrect and misleading.

There are no secrets in our business. Investigation could reveal nothing beyond what has been voluntarily published. The public has been shown just what our business means when viewed as a whole, what purpose it seeks to realize, what prospect for adding to human comfort, convenience, and happiness it holds out.

No other business has any such public to serve. We have greater need of publicity than any other interest because we are asking more of the public than any other interest has any right to ask. We are advocating universal service through our own system. We claim that right, that privilege, because, considering the capital invested, our experience, our ability, and our desire to serve, no other interest could approach the necessities of universal service. There is but one way to get what we ask, and that is to deserve it, and then let the public know we deserve it.

Hudson

THE nineteenth meeting of the Hudson Section was held in the DeGraaf Building on Thursday evening, December 3. J. C. Peck, Commercial Engineer, Hudson Division, read a very interesting paper on "The Commercial Engineer's Part in the Business of Furnishing Telephone Service." After pointing out the desirability of employees' knowing the purposes and aims of the various departments, he outlined what the Commercial Engineering Department does and showed its intimate relation to the work of furnishing service, saying: "The constant increase in population, the opening up of new territory, the new demands of active business interests, make it imperative that the Company constantly extend its field and increase its development. Our slogan —'One policy—one system—universal service,' requires such a progressive policy on our part. From the other point of view—that of the public—it is equally imperative that our system be always first on hand to meet each new requirement. The fact that we are known as a Public Service Corporation indicates an obligation on our part to furnish promptly the service required. The day when the American public could dispense with the telephone has long since passed—our service is a vital necessity in every-day life. It is apparent then from the point of view of either the Company or the public that we must develop. It is the province of the Commercial Engineer to see that the territory is developed on a basis that will give the people the service they need at rates that will warrant the necessary investment."

Following the paper the discussion was participated in by Messrs. White, Arland, Crocker, Anderson, McIver, Allerton, Bull, Eddy, Bunyan, Guardineer, Powley, and Hills.

On the evening of December 17 Mr. Peck gave his paper before a large District meeting held at Glens Falls.

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The discussion was of a lively and interesting character. Those who spoke were Messrs. Beaton, Henckel, Smith, Teegarden, Anderson, Cowdery, Powley, Fuller, and Stearns.

Meetings were also arranged to be held in Kingston and Poughkeepsie, but on account of the severe sleet storm in that region they were postponed until January.

Western

BUFFALO

THE 26th meeting of the Western Section was held on December 17. The speakers comprised men from the ranks of the different departments as follows:

Plant Department

J. H. Klein, Engineer; E. C. Timperly, Chief Clerk, Cable Dept.; H. A. Cannon, Installation Supervisor; C. Mangan, Wire Chief, Niagara Falls; E. J. Mesmer, Wire Chief, Tupper.

Commercial Department—Local Manager's Office, Buffalo

J. V. Graff, Chief Clerk; E. H. Ertel, Salesman; Edward Kenyon, Salesman; A. H. Schoenwolf, Salesman; R. J. Moran, Counter Salesman; R. F. Bosche, Salesman; S. B. Wright, Salesman; R. O. Hodge, Salesman.

Traffic Department

H. J. Schroll, Assistant District Traffic Chief, Rochester; A. F. Neal, Division Traffic Engineer's Office.

Revenue Accounting Department

A. R. Roberts, General Clerk.

The subject was "My Most Interesting and Valuable Telephone Experience." This meeting was considered one of the best ever held in the Western Section. There were about 200 present. An enjoyable vocal selection was rendered by Frederick S. True of the Commercial Department, the accompaniment being played by Herbert A. Swales, also of the Commercial. Messrs. Baldauf and Smith of the Plant Department rendered a musical number, violin and piano, which met with the hearty approval of all members.

At the January meeting a stereopticon lecture will be given on the subject of "Field Lines of Information and Signal Corps Work" by Lieutenant C. A. Dravo of the 29th Infantry, U. S. A., stationed at Fort Niagara, Youngstown. The lecture will have to do with the use of the telephone by the Army in field work and, coming, as it does, at this particular time, from an officer of the United States Army, it will undoubtedly be one of the most interesting we have ever had. A very large attendance is expected.

ROCHESTER

The 20th meeting of the Telephone Society, Rochester District, was held Wednesday evening, December 16, in the Telephone Building.

The speakers were:

W. J. O'Hea, District Manager; R. M. Bruce, District Equipment Supervisor; H. W. Benedict, District Traffic Chief.

The subject was "Answers to Questions Most Commonly Asked By the Public."

Central

TWO very enthusiastic meetings of the Central Section were held during the month of December, one at Syracuse, and one at Utica.

SYRACUSE

The main meeting of the Central Section was held in Assembly Hall, Court House, one November 22, W. W. Nicholson addressing the Society on the subject "Reminiscences." The speaker is a pioneer in the telephone business in Central New York and told a number of humorous and interesting stories regarding the growth and development of the telephone industry Up-State. Mr. Nicholson's paper was followed by other "Reminiscences," from C. A. Nicholson, the speaker's father, A. D. Donovan, E. J. Buchacha and D. C. Cox.

UTICA

The meeting of the Utica District of the Society at Genesee Hall, Utica, on the evening of December 18, was arranged for by a committee composed of C. W. Hitchcock, L. D. Speed, and John P. Lyons. The paper read by J. F. Carroll, Jr., District Chief, on "Telephone Service," before the Syracuse Meeting on November 12 was repeated for the benefit of the Utica District employees. Mr. Carroll's paper was followed by a program of entertainment as follows:

Vocal Solo, W. Fleming, Plant Dept., Rome; Accompanist, Miss Erma French, Traffic Dept., Rome; Recitation and Story, J. Pryor, Plant Dept., Herkimer; Quartette, The Misses C. Kearns, G. Murphy, M. Morgan and F. Kelly; Accompanist, Miss E. Kresge, Traffic Dept., Little Falls; Recitation and Story, L. Pryne, Plant Dept., Utica; Vocal Solo, Miss F. Wilkie, Traffic Dept., Utica; Accompanist, Miss A. Callahan, Traffic Dept., Utica; Song and Dance, The Misses M. Morgan and F. Kelly, Traffic Dept., Little Falls.

At the conclusion of the musical program, the floor was cleared and dancing was enjoyed until a late hour. Altogether, this was considered one of the most successful meetings ever held in Utica.

Operator an Intelligent and Sympathetic Friend and Helper

LATE Saturday afternoon, December 5, an Arlington subscriber called "Long Distance," and the Newark long distance operator was given a case to prove her mettle. A traveling man, thought to be in Cleveland, O., was asked for, with a request for all possible speed. Ignorant of the nature of the emergency, but feeling its demand, the operator was soon in touch with the Cleveland address. The desired party was not in Cleveland, but the operator was informed that he might be reached at a hotel in Philadelphia or through a Mr. Hewling of that city. These facts were speedily made known to the Arlington subscriber. In an instant the operator's every fibre of effort and will and persistency was called into play as she learned that the father of the man she must locate was at the point of death, and only a miracle of speed in transmission and transportation could bring the man in time to his dying father. The operator called all the principal hotels of Philadelphia without success, but, communicating with Mr. Hewling, she learned that her party had been at the Bellevue-Stratford a few hours before and had expected to leave for Cleveland at 7 P. M. The hotel was asked to page Mr. X., but he could not be found and no information could be furnished about him. At once the operator called the ticket agent of the Pennsylvania Railroad at Philadelphia and had Mr. X. paged in the train for Cleveland. Still there was no trace of him, but the operator did not even then abandon her seemingly hopeless task. She explained enough of the situation to the ticket agent to interest him, with the result that another train for Cleveland, leaving about half an hour after the previous one, was also paged and Mr. X. was found.

Leaving his Cleveland train Mr. X. called the Newark long-distance operator, with a short remark that he was ready to talk but could spare only three minutes as his train was about to depart. The connection was completed in thirty seconds, and in hardly less time all thought of the Cleveland trip was abandoned. Mr. X. reached his home by midnight and was in time not only to see and talk with his father but to be with him through his last hours. The chance to render such service as this is an inspiration; to see that inspiration so completely fulfilled is a revelation. It is one of the cases where the one fine fact of splendid service speaks for itself.—MISS G. M. MORRIS, Evening Chief Operator, Newark Toll Board.

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Here & There

An Adventure by Telephone

Miss Mary L. Riordan, Night Chief Operator, Jersey City, submits an account of a really exciting experience and one which bade fair to be even thrilling. Very correctly, we know, she thinks our readers may be interested to hear about it:

"One morning at 4:35 o'clock we received a subscriber's call. The operator answered 'Number please' several times, but no response came. Suddenly there was a terrible noise on the line as if some one were struggling. The noise then ceased and the line lamp remained lighted. Listening on the line a few minutes, I heard heavy breathing; I tried to attract the attention of the person who I thought was near the telephone by ringing on the line and putting it up on the 'howler,' but with no success. Some one could be distinctly heard moving around the room.

"I was afraid something might have happened, so I notified Police Headquarters, giving the name and address of the place concerned. Police Headquarters promised to send a reserve there at once.

"About half an hour later the subscriber flashed and said it was the dog that had knocked over the telephone. He had gotten tied up in the cord and could not extricate himself.

"Alas, I lost a chance to be a heroine."

Christmas Tree in Brooklyn Main Retiring Room

On the evening of December 23, the Chief Operator and three Supervisors of the Brooklyn Main central office carefully locked the doors of the sitting room and proceeded, with the assistance of two Western Electric men, to set up and decorate a splendid Christmas tree.

Chains of ornaments and lights were prettily draped over the tree, and the floor beneath it was made to look like a snow bank by the use of cotton and artificial snow. Laid out on this snow bank was a miniature village with roofs covered with glistening snow. Electric lights, the globes of which were in the form of birds, monkeys, Billikens, apples, oranges, pears, peaches, etc., were the feature of the tree and were arranged artistically, an illuminated star on the topmost twig.

Cotton and artificial snow were spread over the tops of the electroliers to give them a snow-covered appearance, and chains of laurel and other decorations were draped across the room.

Summit Porch

The Summit, N. J., central office is distinctive in that it has the advantage of a summer porch added to the other features of the operators' retiring room. This central office occupies the second floor of a rented building, and adjoining the retiring room is a summer porch about 16 feet long and 7 feet wide, which has been fitted up as

Summer Porch Adjoining Operators' Quarters at Summit, N. J.

a very pleasant addition to the retiring room. Two Crex rugs were furnished and piazza rockers. From the picture, it is easy to believe that the operators took every advantage possible of the fresh air retiring room. — J. M. BAYLES, Manager of Traffic Inspection, Newark.

"You Never Know Your Luck"

Miss Laura Streicher, a supervisor in the Buffalo Seneca central office, recently allowed one of her fellow-workers to persuade her to buy a chance on an automobile which was being raffled in the interest of charity, the amount paid being 50 cents. Miss Streicher is now the proud possessor of a 1915 five-passenger Maxwell touring car, fully equipped with all the latest electrical devices used in automobiles, and valued at $750. Undoubtedly, Miss Streicher's surprise at winning the car equals the disappointment of one man who purchased 100 chances on it and another who bought 50. However, Miss Streicher says, "Now that I've got it, what am I going to do with it?"—(Miss) J. M. DUGGAN, Seneca Chief Operator.

A New Fire Extinguisher

Springville, N. Y., was recently the scene of an early morning fire, which damaged property to the extent of about $30,000. A grist mill, store and three dwelling houses were destroyed. The alarm was turned in about four o'clock on a cold stormy morning, and the Volunteer Fire Department turned out for the struggle. A New York Telephone Company pole line carrying a 100-pair cable passed directly in front of the mill. A pole near by caught fire and I. D. Harkins, the Local Wire Chief, who was on the scene, realized that the cable would soon be lost if immediate steps to check the fire were not taken. Failing to interest any members of the fire department in his troubles, he made a search for something with which to extinguish the flames. As a last resort, he rushed into the bar-room of a neighboring hotel, which was also threatened by the flames, and obtained two bottles of seltzer. Tying these around his neck and climbing the pole, he soon extinguished the blaze and saved our cable.—J. W. BANKS, Division Equipment Supt., Buffalo.

Growth

On December 1, 1892 (twenty-two years ago), in New York City (now Manhattan-Bronx Division), we had eight (8) central offices with a total of 8,834 lines and 8,947 stations.

On December 1, 1914, in the same territory, we have thirty-one (31) central offices and eight (8) theoretical exchange areas with a total of 178,790 lines and 417,034 stations, a net gain of about 1,924 per cent. in lines and 4,561 per cent. in stations.

F. B. SPOONER, 18 Cortlandt St.

The Inspector asked the P. B. X. operator where the cable box was located. She did not know, but obliged him by calling up the engineer, who told her that the box was in the engine room. "Send it up, please," she said. "The Inspector wants it."—Inspection Department, Manhattan.

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"Service First"

The accompanying illustration shows splicers and linemen temporarily restoring service in a 400-pair aerial trunk cable between Hudson Falls and Fort Edward on December 28, after the fire from a burning building had destroyed the sheath and a portion of the conductors. The men began work on the cable as soon as they could get close enough to do so and were frequently concealed from view by smoke and steam. The pole and 16,000-pound support strand were saved through co-operation on the part of the local fire department who, at the request of the Wire Chief, kept a stream of water playing on the pole and cable.—C. H. TEEGARDEN, District Plant Supt., Schenectady.

Linemen Repairing a Cable and Maintaining Service While Firemen Fight Flames.

Telephone First Aid When Burglars Enter

Miss H. M. Lyons, Evening Chief Operator, Waverly, N. J., tells of an experience of Miss Minnie I. Cullen, operator at Waverly, who received a call from an excited and apparently very much upset subscriber, saying that a burglar was trying to enter her house. The operator completed the call as speedily as possible. A few hours later the subscriber called the manager to thank the operator for her promptness in securing aid. Apparently the help arrived in time to prevent any serious trouble.

Not the least value of telephone service is the feeling of security it engenders, when a person is alone. As a convenience it is indispensable; as a protection, unrivalled.

No Nursery Annex

Recently, one of the interviewers in our Application Department was surprised by seeing an applicant wheel an infant in a go-cart up to her desk and proceed to make application in the regular way. While this procedure was going on, the infant, receiving no attention, started to voice her objections in a very strenuous manner. The Application Department not being properly provided with articles of a nature commonly used to soothe such objections, and the mother showing no disposition to interfere, it was left to the inexperienced interviewer to calm the young visitor. This she proceeded to do by wheeling the go-cart back and forth through the waiting room until the mother had finished writing out the application.

Upon questioning the applicant, who was no more than a girl of nineteen, it was found that she would not accept a position unless she could bring the baby and go-cart to the central office in which she was employed.

The proposition might be given a little consideration, in cases where the infants were girls, along the line that we would always have material growing up!—(MISS) KATHARINE M. SCHMITT, Manager Operators' School, Manhattan-Bronx.

A Long Distance Rescue

From Chapinville, N. Y., comes the account of a man apparently drowned, who was restored through the instrumentality of the telephone. The man had been fishing and in some way appears to have fallen from the boat. By the time he was brought ashore he seemed beyond help, and neither of his two rescuers knew how to give artificial respiration. Although lacking in the skill required, the rescuers had what proved equally valuable—presence of mind. A physician was called on the telephone and directions were thus obtained as to the necessary course of procedure. Acting upon these telephoned instructions the rescuers set to work and the "drowned" man was quickly revived.

Olean Telephone Float Wins Contest

Prizes were offered for the best commercial float in a parade held recently in connection with a municipal celebration in Olean, N. Y. Many local industries entered floats for the contest, but the judges were unanimous in awarding the first prize, $25.00 in cash, to the New York Telephone Company.

Some Party Line

A subscriber located in the New Jersey Division called for the traffic manager recently and said he was a councilman. He stated that, upon looking through the last issue of the New Jersey directory, he had noticed that the new telephones recently installed in the fire houses of the town all had "J" designations. He further stated that he had counted all the "J" designations in the town and found there were 157 of them. He said he felt that 157 parties on one line were too many, but, before taking the matter up at a meeting of the town council, he wanted to make sure as to how many stations were allowed on a line.

After a full explanation, the councilman stated he had been under the impression that all "J" designations were on one line, "R" designations on another and so on. The councilman thanked the assistant traffic manager for the explanation given and stated he would not take the matter up at the council meeting.—W. F. LOSEE, Asst. Traffic Mgr., Newark District.

Telephone Saves Lives of Two

A heavy explosion in L. Bamberger's "Million Dollar Newark Department Store" early Sunday morning, November 22, nearly cost two engineers their lives.

The explosion, which occurred in the big engine room of the store, was so severe that it broke several large gas pipes, the escaping fumes from which overcame one man entirely before he could escape. The other, trying to save his stricken companion, crept along the floor pulling the unconscious man after him, when he noticed one of the extension telephones with which the engine room is equipped. Using this telephone, he managed to call the central office operator and tell her of his plight, when he too succumbed to the gas fumes. The "A" operator rang on several lines of the P. B. X. and finally raised a party in the store, to whom she recited the engineer's story. This man quickly rushed help to the stricken workmen and got them into the open air, where they soon revived.

Later the subscriber called the traffic manager's office and expressed his appreciation of the operator's promptness, stating that the two men undoubtedly owe their lives to the telephone, and the operator's persistence. —(MISS) EDNA J. HAVILAND, Market Supervisor.

Found a Priest by Telephone

Brooklyn, Dec. 23, 1914.

The New York Telephone Co.

Gentlemen.

I feel in duty bound to acknowledge a courtesy performed by one of your operators in the Flatbush Exchange in Brooklyn in a case of emergency.

I had a very dear friend who was dying in his home at —— Street and Avenue ——, and it was necessary for me to get a priest in his last moments. Being a stranger around this locality and not knowing where the nearest church was, I went to a telephone and asked the operator. She finally secured the right assistance.

I would ask you to take note of this attention, as I feel it would be a benefit for the community at large to know that such valuable service is rendered by your telephone company.

This operator's number is 10.

Respectfully,

(Signed).

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HOW TO KEEP WELL AND COMFORTABLE DURING THE COLD WEATHER

By DR. ALVAH H. DOTY

AS winter advances it is important to take into consideration the means by which our health may be protected and comfort maintained during the cold weather. Nature is able to go a long way towards securing this result, for the resisting power of a healthy body is very great and capable of dealing with extreme variations of temperature, provided aid is extended in the way of careful attention to personal hygiene, suitable clothing and habitations.

A young and healthy person would probably be able to pass through the entire year with little or no change in the form of dress and still avoid any unpleasant consequences; on the other hand, as age increases, and when sickness occurs, or when the rules of health are violated, this wonderful resisting power of the body becomes weakened and unable to properly perform its function; then the loss thus sustained, so far as a lowered temperature is concerned, must be compensated for by additional clothing as well as protection from other sources. Otherwise unpleasant or dangerous results may follow.

It is therefore obvious that the greatest safeguard in maintaining health and comfort under the various climatic conditions is the proper care of the body, in the way of good nutritious food, appropriate clothing, exercise, bathing, and temperance in all things. The satisfactory results which follow this course are particularly apparent during the cold weather.

While it is true that some articles of diet are greater heat producers than others, it is not necessary in this country that any special change be made in the character of our food during the cold season beyond that which is regulated by the supply available during the winter months.

It should be said here in connection with the subject of food that most of us eat far too much—particularly of meat. The excess of food which we consume is not only of no value to us but it overworks the digestive organs which become exhausted in the effort to assimilate it. This becomes no small factor in diminishing the resisting power of the body upon which we so largely depend in the preservation of health. Besides, overfeeding, except as a temporary expedient in disease, is a common cause of organic affections later in life.

Another truth may be stated in connection with this subject, and that is, that breakfast should be the best and most important meal of the day; there is no better evidence of health than a good appetite upon rising in the morning, for the alimentary tract has had a long rest and is in good condition to digest a generous meal. The notion that it is sufficient to take only a little fruit, a roll and some coffee for breakfast, is without reasonable or logical foundation, and there is no time when it is more detrimental to health than during the cold weather. For the body, like an engine, must have a proper amount of good fuel in order to perform its work.

As a protection during the cold weather it is important that the skin should be kept in a healthy and active condition; this may be accomplished in a very effective manner by proper bathing and exercise. Various opinions exist as to the form of bath which is most suitable for this purpose; most of these opinions are based on theory or individual preference. The most stimulating and pleasant form of maintaining the function of the skin consists in the daily shower of very warm water, and of short duration, followed *immediately* by a cold shower for the fraction of a minute only, the skin being afterwards briskly rubbed and dried. This bath should be taken upon rising in the morning. By this method the surface of the body having been well warmed, the cold shower produces a pleasurable and stimulating effect with the minimum amount of shock, and a good reaction promptly follows if the person is in reasonably good health. Those who indulge in this form of bath find that the body is kept quite warm and comfortable during the day, and a feeling of well being exists, for the skin under this treatment is better able to perform its function and also act as a protective agent.

A cold tub or shower bath, particularly in the winter, is neither healthful nor desirable. The shock which follows is so pronounced that a prompt reaction does not usually take place even in healthy subjects. Furthermore, this form of bath is positively contraindicated in the case of the very young or very old, the feeble, and those having organic affections, for under these conditions the result may be harmful or dangerous. It is true there are those who daily throughout the year take a cold bath of the temperature of the running water and stand the shock of this extreme reduction of temperature with apparent pleasure and benefit. However, this proves nothing beyond the fact that the resisting power of some persons is far above the average.

In the future the shower is quite sure to replace the tub for bathing purposes, for the latter has no stimulating qualities, is cumbersome to use and is of value only when the old form of a weekly scrub is employed.

Exercise is of inestimable value in keeping the body in proper tone, and warm and comfortable during the cold weather. For if the general muscular system is kept active, more blood is brought to the surface, where it assists in overcoming the effect of the external cold. Furthermore, it goes far to relieve the congestion of the internal organs which usually occurs during the cold weather for the blood supply of the surface is diminished by the low temperature. For instance, it is well known that the kidneys are more active in the winter than in the summer since during the former per-

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iod the amount of blood in these organs is greatly increased and their function correspondingly stimulated. On the other hand, it is diminished during the warm season, for the skin is then very active. These organs relieve each other, for their function is similar.

Walking is the most common and most valuable form of exercise. It is largely for this reason that the game of golf has become so exceedingly popular and of such extended benefit to the public. Unfortunately, this game is not available for all, but walking is, and every one who is able to do so should walk from three to five miles daily, or even more. If this exercise cannot be taken during the day, the evening should be employed for this purpose, for there is but little truth in the belief that night air is unhealthy. Those who have established the practice of taking daily exercise need not be told the benefits which follow it, particularly those who are confined in offices and are of sedentary habits. At the end of the day's work these persons commonly experience a feeling of fatigue; this is mental rather than physical, and the remedy for it is exercise and not rest.

The selection of clothing for the cold season generally involves a change both in the under and outer garments, and the addition of great coats or wraps for outside exposure. It would be difficult to describe the numerous styles and fabrics which are recommended for underwear, the advantages of the greater number of these are largely theoretical. While the various fashions may be acceptable to some, there is but one material which practically and scientifically has received general approval for winter underwear, and that is wool. This substance offers the best protection against the low temperature, for it is a very poor conductor of heat and cold, and while in this way it helps to retain the body heat it also very effectively aids in preventing the chilling effect of the external temperature upon the surface of the body. Cotton is the least valuable for this purpose, while silk probably occupies a position between wool and cotton. Some wear cotton underclothing throughout the year apparently with comfort, yet this does not prove that it is suitable for general use.

It is not required that undergarments shall be composed entirely of wool, for a mixture of twenty-five per cent. of cotton does not materially affect the protective value of this material, while it renders it more agreeable to the skin, and prevents excessive shrinking during the process of washing—although to a great extent modern methods have overcome this unpleasant result.

Not only the material, but the weight of winter undergarments must be considered. It is the common practice to have but one thickness for winter use, whereas in our climate every one should be supplied with two weights in order to insure comfort, for during the latter season the weather oftentimes becomes quite mild, and continues so for a number of days.

Upon the approach of winter, it is also the custom to substitute heavy outer garments for those of the lighter weights worn during the summer; this is largely a matter of habit and not particularly good or logical. While it is important that woolen undergarments should be worn during the winter since it constitutes a direct protection to the skin and guards against the unpleasant effect of sudden changes of temperature upon the surface of the body, a variation in the weight and material of the outer garments is neither necessary nor desirable, for it is at least responsible for much discomfort.

During the winter, particularly in cities and towns, persons remain within doors not less than twenty out of the twenty-four hours of day. In apartments, workshops, or offices the temperature is often super-heated, sometimes reaching 80 or 85 degrees; this is practically summer heat, but without the fresh air which is available during the latter season, for the windows are kept carefully closed and with these unsanitary surroundings a person who is too heavily clothed is not only rendered uncomfortable, but the surface of the body is very apt to become tender and moist. In this condition the skin becomes particularly susceptible to the lowered outside temperature which is often 50 or 60 degrees below that of the interior. There is no doubt that this condition is often directly responsible for the various ailments which so frequently occur during the cold weather. The fact is that during the winter we wear heavy and uncomfortable outer garments in order to be protected for a short time while in the open air, whereas our mode of dress should rather be compatible with the interior and then some form of heavy wrap added when we go outside. Under these conditions there is no reason why the same weight and texture of outer clothing should not be worn throughout the year, except probably the very thinnest material known as "tropical weight" which is used during very hot spells in midsummer. Those who have adopted this modern and reasonable form of dress are fully convinced of the comfort and protection which it affords, particularly within doors.

Protection against the diminished temperature outside should be provided for by the use of heavy coats or wraps upon leaving the interior—the great coat or "ulster" is an example of this form of garment, particularly for very cold weather and for evening use, and is made to cover almost the entire body.

It is also very important that special protection should be provided for the feet during cold and wet weather, for the footwear of the present day, particularly that worn by women, offers but little aid in this direction. Carelessness in this way constitutes the most common cause of colds, sore throats, and other conditions which are not only uncomfortable but often prove dangerous. Waterproof shoes or boots exist chiefly in the imagination and offer little or no protection. Every one should be provided with rubbers and overshoes and use them whenever the streets are damp or wet or covered with snow. Unfortunately, this valuable form of protection is not popular in this country. Besides complaint is often made that they sweat the feet; this is largely imaginative, for rubbers do not interfere with a person's comfort if they are promptly removed upon entering the house and not kept on for some time afterwards, which is a common practice. Proper protection of the feet and care to prevent the overheating of apartments during the winter months are far more important that the public realize.

The intent of this article is not only to instruct but to warn the reader against the many fallacious theories concerning the care of the person during the cold season. The protective measures which have been suggested are easily carried out and will go far to prevent uncomfortable conditions as well as the various ailments which are commonly present during the winter.

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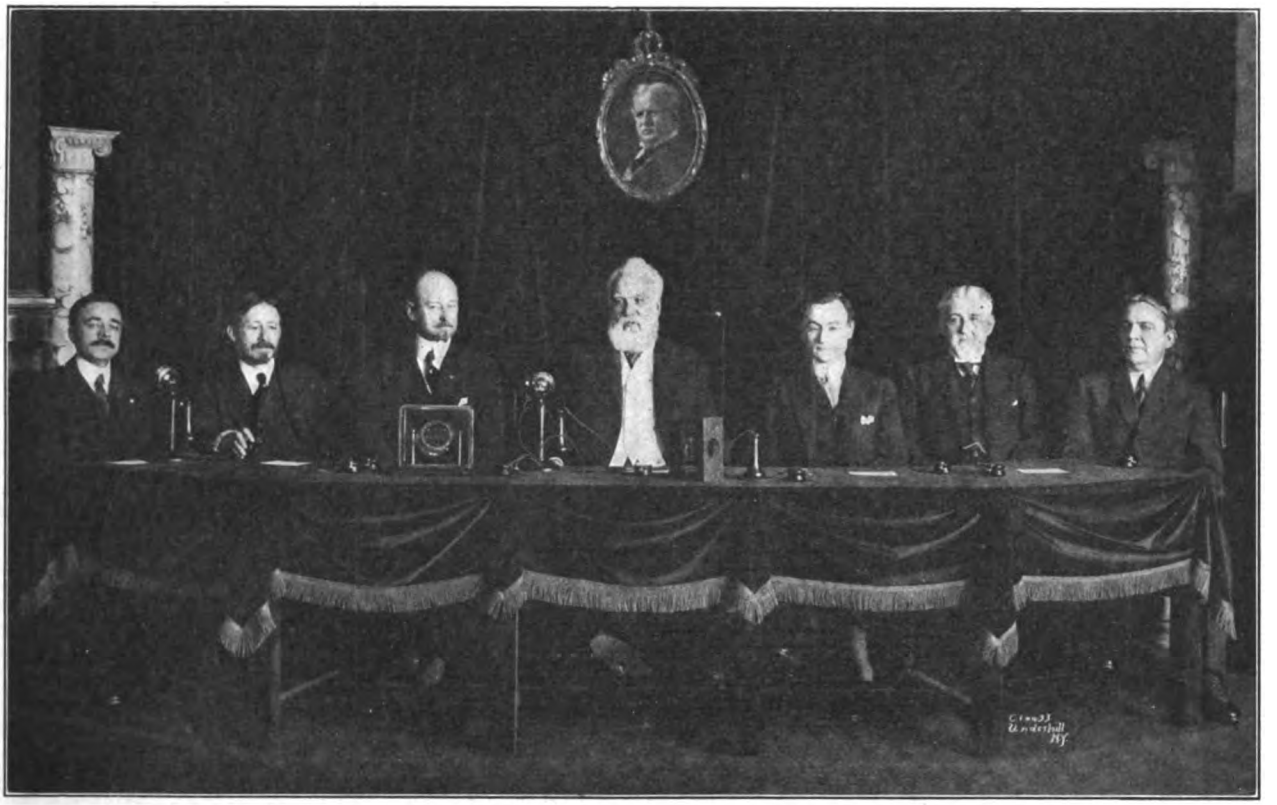

OPENING OF THE TRANSCONTINENTAL TELEPHONE LINE

Dr. Alexander Graham Bell in center.—To the left of Dr. Bell, in order, Hon. John Purroy Mitchel, Mayor of New York; C. E. Yost, President Nebraska Telephone Co., Omaha; Hon. Wm. A. Prendergast, Comptroller of the City of New York.—To the right of Dr. Bell, in order, U. N. Bethell, Senior Vice-President American Telephone & Telegraph Co., presiding; Hon. George McAneny, President Board of Aldermen, New York City; John J. Carty, Chief Engineer, American Telephone & Telegraph Co.

(In front of Dr. Bell is the replica of his original telephone.—In front of Mr. Bethell is the glass case containing a piece of the wire over which Dr. Bell and Mr. Watson carried on the first telephone conversation in the world.)

Formal Opening of the Transcontinental Telephone Line

At the Headquarters of the Bell System, 15 Dey Street, New York, Monday, January 25, 1915, at 4 o'clock P. M.

President Wilson Speaks from Washington to New York and San Francisco—Dr. Bell and Mr. Watson Talk from Coast to Coast—Mr. Vail, at Jekyl Island, Florida, Listens to the Other Speakers and Talks Through New York to San Francisco, 4,500 Miles, the Longest Distance the Human Voice has Ever Been Carried—Many Business Conversations Already Have Passed Between Gotham and the Golden Gate

The impressiveness of the ceremonies commemorating the completion of the Transcontinental Telephone Line revealed the achievement in its true light,—of awe and wonderment.

As the perspective grows, talking to San Francisco will become commonplace, just as telephoning shorter distances has become commonplace, and all thought of the tremendous import of the thing that is done will be lost; but on Monday afternoon, January 25, 1915, those who were present and saw the venerable scientist, Dr. Alexander Graham Bell, talking with his former associate, Mr. Thomas A. Watson, were made to realize that these two men were reunited in soul and spirit, although a continent separated them bodily, and that it was this reunion and not alone the simple words they said to each other, which was made possible with the telephone by what Mr. Vail and Mr. Carty and the other officials and scientists of the Bell System have done.

This reunion was so dramatic and intense that the audience was thrilled to the point of emotion. The scene will be indelibly impressed upon every beholder, and he will be callous indeed who, as he talks over the telephone hereafter, does not feel the influence of that hour.

"It appeals to the imagination to speak across the continent," said President Wilson to President Moore, of the Panama-Pacific Exposition.

Appealing indeed, and true. In saying this the President used a conversational tone of voice, but he was heard in San Francisco much more distinctly than will be possible for persons on the outside of the audience which will gather to hear him speak when he arrives in San Francisco to attend the exposition in person.

To commemorate the triumph of science, a notable gathering met in the Directors' room and offices of the American Telephone & Telegraph Company at 15 Dey Street on the above date. Chief among them were Dr. Alexander Graham Bell and his party, Mayor Mitchel, Presi-

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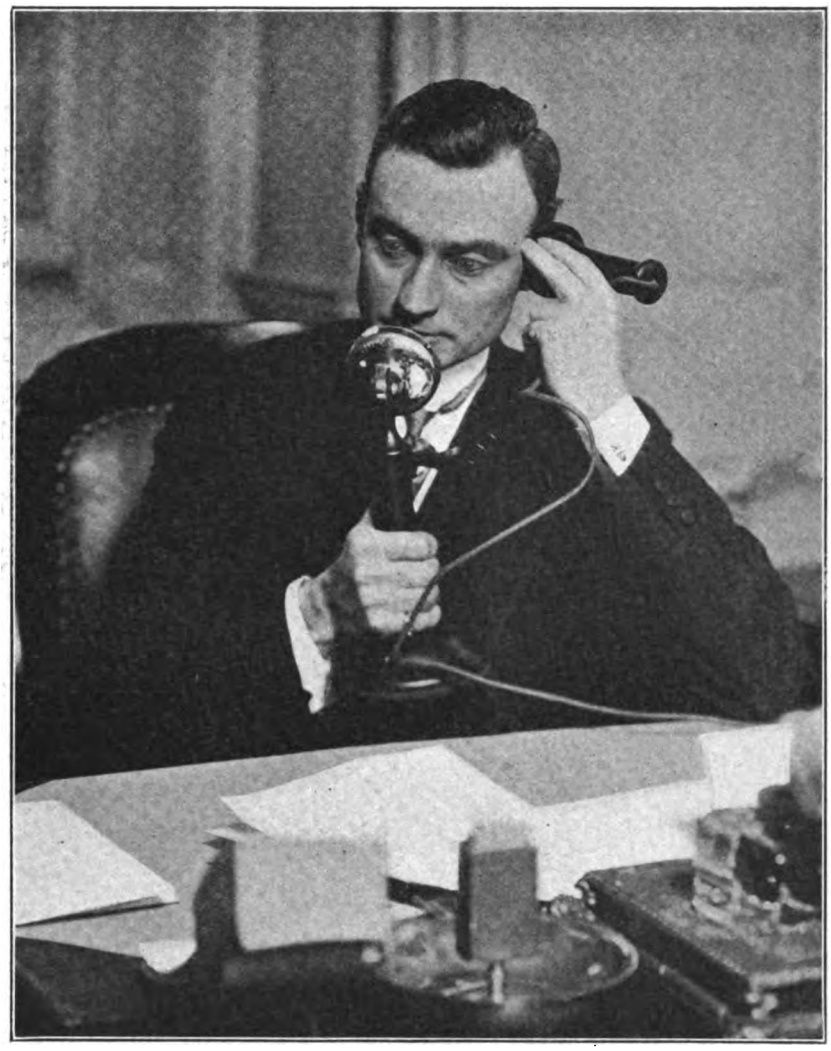

HON. JOHN PURROY MITCHEL
Mayor of New York

dent McAneny, of the Board of Aldermen, Comptroller Prendergast, of the City of New York, and other public officials, representatives of civic organizations, presidents of national engineering societies, leaders in the commercial and financial world, prominent journalists, and telephone officials.

Seated on a platform in a corner of the room with Dr. Bell were the Mayor, Mr. U. N. Bethell, Mr. John J. Carty, the President of the Board of Aldermen, and Mr. C. E. Yost, President of the Nebraska Telephone Co.

A similar gathering was present in San Francisco, when Mr. Thomas A. Watson was the principal guest.

On the guest table were two standard desk sets and a number of hand receivers, so that every one could "listen in" while the conversations were going on. There were also on the table two unusual looking objects, both of which were regarded with the greatest reverence. One was a replica of the original telephone conceived by Dr. Bell and made by the hands of Mr. Watson. The original is in the Smithsonian Institution in Washington. The other object, enclosed in a glass case, was a piece of the original wire over which the first telephone conversation in the world was held, the speakers being Dr. Bell and Mr. Watson. During the course of the afternoon Dr. Bell spoke to Mr. Watson through this telephone and over this piece of wire.

Simultaneously at half-past four in New York and half-past one in San Francisco (three hours being the difference in the standard time in the two cities), the ceremonies began.

Mr. U.N. Bethell, Senior Vice-President of the A. T. & T. Co., and President of the New York Telephone Co., presided in New York, owing to the absence of Mr. Vail, who was unable to be present.

Following is a somewhat sketchy account of what transpired:

Mr. Bethell's Address

MR. BETHELL: Ladies and Gentlemen: I regret very much to say that Mr. Vail is not able to be here this afternoon. In his behalf, and in behalf of the American Telephone & Telegraph Company and the Associated Companies, I bid you a very hearty welcome.

This afternoon we shall formally open the first transcontinental telephone line, spanning a distance of three thousand four hundred miles. This line forms a highway of speech between the Atlantic and Pacific Coasts. A telephone network unequalled in its comprehensiveness now covers our vast country from sea to sea, connecting cities, towns, villages, and farms into what is known as the Bell Telephone System. When we remember that the telephone itself was invented no longer ago than 1875, we cannot but marvel at the position attained by this wonderful instrument as an agency in the conduct of social and commercial affairs throughout our country.

Some idea, however, necessarily incomplete and inadequate, as to the size and importance of the Bell System as it is to-day, may be conveyed by a few figures.

Using round figures, there are in the system, including connecting companies, nine million telephone stations and twenty-one million miles of wire. The plant of the American Company and its associated companies alone represents an investment of eight hundred and fifty million dollars.

The army of men and women engaged in its operation, exclusive of those employed by connecting companies, numbers 160,000.

The universality of the system is strikingly shown by the fact that, while in our country there are approximately 25,000 places reached by the telegraph, sixty thousand railroad stations, and a like number of post offices, the telephone joins together no less than 70,000 communities.

The value of that agency, as told by the extent to which it is used, cannot be expressed in figures easily comprehensible.

The messages transmitted over its lines number approximately nine billions a year. To aid us in our attempt to catch the significance of this figure, the statisticians say it is equivalent to twenty-six million messages a day, or more than one million per each hour throughout the twenty-four.

The telephone has attained its largest measure of usefulness in the land of its birth. It is sufficient to make but one comparison. In the two cities we are joining together telephonically, New York and San Francisco, there are 685,000 telephone stations—more by 50,000 than the number in London, Paris, Berlin, Vienna, Brussels, Amsterdam and Petrograd combined. (Applause.)

The population of those European capitals is more than three times that of the two American cities named. The statistics as to those foreign cities, I may say, relate to conditions before the commencement of the European war.

From the beginning, the development of the art of telephony has been advanced in America more than in any other country, and more than in all other countries combined. American engineers, inventors, and financiers, American operating, commercial, and accounting forces, through the introduction of new ideas and practices, have always kept the Bell System of the United States in the foremost position among the telephone systems of the world, and have made it, in all respects, the universally recognized model.

In the period during which the construction of another great and important undertaking, the Panama Canal, has been in progress, more than twice as much has been spent in improving and extending the Bell System as has been spent in constructing the canal. The Panama Canal and this transcontinental line will each in its way bring the west and the east into closer relations. The nation's solidarity, as well as its prosperity, depends upon its communication. The telephone, in its conquest of space and time, is rendering a distinct and unique national service, by affording an easy means for

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the exchange of ideas and experience, by bringing widely separated peoples and communities into close personal touch; it is aiding in the removal of sectional prejudices, and welding our vast country into one homogeneous unit.

It contributes constantly and most effectively to a larger and fuller individual and national life. Of those who will participate in this epoch-making event, it is impossible to mention all who have contributed to the result. In a sense, very many have contributed in one way or another, directly or indirectly. It is not easy for one to put his finger upon a particular piece of apparatus, apart from the telephone itself, and say this thing has made it possible to transmit speech from the shores of the Hudson or the Islands of the Atlantic, to the Golden Gate. Within our family circle we are proud of saying that great credit is due to our Chief Engineer, Mr. John J. Carty, and his whole staff. But even with the splendid work of Mr. Carty and his associates, the achievement would not have been possible, except for the courage, sagacity, and breadth of vision of our President, Mr. Vail.

During the afternoon the President of the United States will talk over this line from his desk in the White House to the President of the Panama-Pacific Exposition in San Francisco. The Mayor of New York will exchange greetings with the Mayor of San Francisco.

Mr. Vail, who happens to be at Jekyl Island, will talk from there, speaking simultaneously to Dr. Bell in New York and Mr. Watson in San Francisco.

Mr. Bethell then introduced Dr. Bell, who rose and bowed amid great applause, after which announcement was made that Dr. Bell and Mr. Watson would talk.

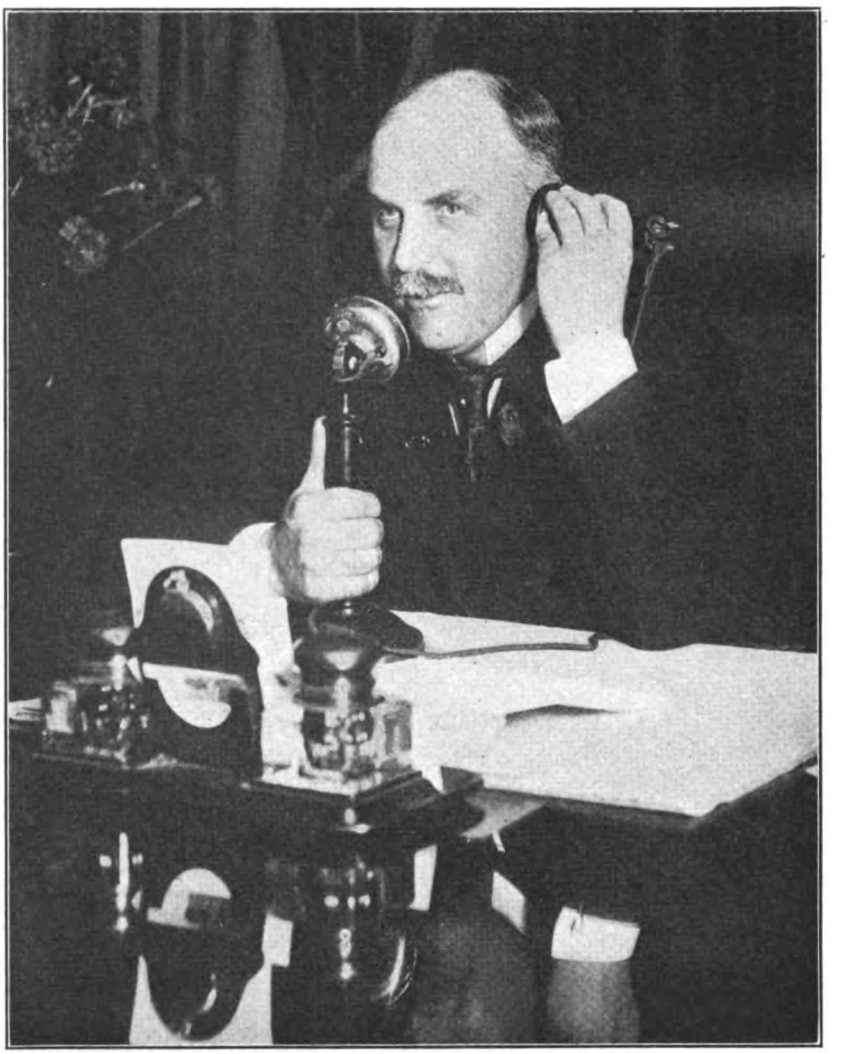
MR. CARTY: Mr. Watson is now addressing the audience at San Francisco. (Laughter.) We are just a little bit ahead of him. (Laughter.)

I was so anxious to proceed with this historic talk that I did not wish to cause the programme to lag a moment by anything that I should have to say.

To fill in the moments until we hear from Mr. Watson, I will say that to gratify a sentimentality among all telephone men, we have arranged that an exact reproduction of the first telephone that was ever made should be here for your view and inspection. There it is, in front of His Honor, the Mayor. It is a crude wooden telephone. Through that the first conversation took place—the first in the world. Dr. Bell was the first among men to speak over the electric telephone, and Mr. Watson was the first to hear; and we thought that when we were filled with thoughts of Auld Lang Syne we would bring out the old instrument and let that instrument participate in this great triumph. We are sure that Dr. Bell will talk better to-day, through that old instrument to Mr. Watson at San Francisco, than he was ever able to talk from one room to the other with the very best line of those days (applause). So that this sentiment, like all good sentiment, has a great deal of meaning beside the little bit of poetry that is in it. That has an immense significance. It shows that the telephone itself is vital, but it shows how great is the importance of the plant, and what marvelous improvements must have been made whereby the Bell plant of to-day will conduct from that crude, homely instrument the feeble tones to San Francisco, where they will plainly be heard by Mr. Watson, much louder and more distinctly than he heard them the first time that speech was ever heard over the telephone. That is the significance of the wooden box there. I expect to be told when Mr. Watson is ready, any moment, so that I will stop when I am signalled, or "flagged" as they say in railroad parlance.

Mr. Carty at this point received a signal from Mr. Gherardi, and announced that Mr. Watson was ready.

Dr. Bell then took the telephone before him, and the following conversation was held between him and Mr. Watson.



HON. JAMES ROLPH, JR.
Mayor of San Francisco

Dr. Bell and Mr. Watson Formally Open Transcontinental Telephone Line

DR. BELL: Hoy! Hoy! Mr. Watson! Are you there? Do you hear me?

MR. WATSON (in San Francisco): Yes, Dr. Bell, I hear you perfectly. Do you hear me well?

DR. BELL: Yes, your voice is perfectly distinct. It is as clear as if you were here in New York instead of being more than 3,000 miles away. Do you remember, Mr. Watson, that evening thirty-eight years ago when we conversed through the telephone on a real line for the first time?

MR. WATSON: Yes indeed! That line was two miles long, running from Boston to Cambridge. You were overjoyed at the success of the experiment.

DR. BELL: We are talking over 3,400 miles as easily and clearly as we talked over two miles thirty-eight years ago.

MR. WATSON: The telephone men have certainly done wonderful things with your invention since that first outdoor test. We mustn't forget that the circuit we are talking over is really 6,800 miles long, as of course, the earth cannot be used for the return now as we used it then.

DR. BELL: I want to switch in another telephone and talk to you through that.

(*Dr. Bell switches in the first telephone.*)

DR. BELL: I am now talking through an exact duplicate of the first telephone, which was made in June, 1875. Can you hear me?

MR. WATSON: I hear it perfectly though less distinctly than the other, of course.

(*Now switching back to the standard transmitter.*)

DR. BELL: What wonderful progress has been made by the Bell System since

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UNION NOBLE BETHELL
Senior Vice-President American Telephone & Telegraph Co. and President New York Telephone Co.

then to enable our voices to be transmitted over a circuit of 6,800 miles without the least apparent distortion or weakening.

MR. WATSON: Their work has been superb and superb also is the discipline of the organization that watches every inch of this long circuit to safeguard those feeble vibrations from the many things that might interfere with them.

DR. BELL: *All honor to the men who have rendered this great achievement possible. They have brought all the people of the United States within sound of one another's voices, and united them into one great brotherhood.*

Everything Dr. Bell said was repeated by Mr. Watson to the audience in San Francisco, and the applause with which it was received was distinctly heard by Dr. Bell and the others who were listening in on the line.

After this conversation, all of which was heard by Mr. Vail at Jekyl Island, Mr. Carty announced that Mr. Vail himself would speak to both Dr. Bell and Mr. Watson. Mr. Carty then said:

MR. CARTY: Mr. Vail, this is Mr. Carty. All of your friends are here and we told them that you have listened to this wonderful conversation between Dr. Bell and Mr. Watson, and that now you are going to say a few words of a congratulation to Dr. Bell and Mr. Watson, and we will listen now.

The conversation between Mr. Vail and Mr. Watson covered a distance of 1,100 miles more than from New York to San Francisco, making the total distance the voices of Mr. Vail and Mr. Watson were carried 4,500 miles.

After his talk with Dr. Bell and Mr. Watson, Mr. Vail continued speaking. Turning to Mr. Bethell, Dr. Bell asked: To whom is he speaking now?

Mr. Bethell replied:

MR. BETHELL: To Mr. McFarland, the President of the Pacific Company. They are talking about the weather in Florida and the weather in California, and its relative merits.

When the conversation between Mr. Vail and Mr. McFarland was over, Mr. Bethell said to Mr. Vail:

MR. BETHELL: Mr. Vail, a great many of your friends are here in the audience, and they have looked up to me and have asked me to give you their compliments, their regards, and their greetings. A number of our directors are here, and they send their compliments and best wishes.

To the audience Mr. Bethell said: "Mr. Vail says he is very sorry indeed that he cannot be here; but that he thinks it is better for the demonstration, because it shows what he can do."

Hearing this, Mr. Vail made some comment, to which Mr. Bethell replied: "We all know what you can do."

MR. CARTY: We are now going to have a talk between the Mayor of New York and the Mayor of San Francisco.

MR. BETHELL: Ladies and Gentlemen, the Mayor of New York will exchange greetings with the Mayor of San Francisco.

MR. CARTY (Telephone): Is Mayor Rolph there?

(Reply.)

MR. CARTY (Telephone.): I will connect you with Mayor Mitchel of New York, who will now talk to you.

MAYOR MITCHEL: Hello, Mr. Mayor. As Mayor of New York, which stands at the gateway of the east, I greet you, as Mayor of San Francisco, which stands at the gateway of the west.

* * * * *

MAYOR MITCHEL: Yes, I hear you plainly. It is a long way to San Francisco; but I think that, by the completion of this Trans-Atlantic Telephone Line, our respective cities are now doubly joined together, first, by the Panama Canal, which joins us together for the rapid passage of maritime commerce, and now by the telephone which links us together by the power of the human voice.

* * * * *

MAYOR MITCHEL: Yes, sir, I remember it. You know we do not all take that advice in New York; but I think it is very good.

* * * * *

MAYOR MITCHEL: I feel that you and I can join in congratulating the officials and engineers of the telephone company, whose genius and work have made possible this new trans-continental means of communication.

* * * * *

MAYOR MITCHEL: Yes, yes. Well, we cannot put limits on it, and I am sure we do not want to.

Mr. Mayor, I look forward with a great deal of pleasure to seeing you in the spring.

Mayor Rolph extended to Mayor Mitchel in his official capacity an invitation to Mayor Mitchel and the members of his official family to the exposition, particularly requesting that they be present on the opening day, February 20. He spoke very enthusiastically of the character and the clearness of the transmission. Mayor Rolph created some merriment by stating that it may be "a long way to Tipperary," but this is a short way to San Francisco. He told Mayor Mitchel to look out for his city: that San Francisco is growing fast, and to remember that some one said "Go west, young man."

Frequently during the demonstration, Mr. Vail would participate in a triangular conversation, with some one in New York and some one else in San Francisco, just as it happens every day that such conversations are carried on within an office through the private branch exchange.

MR. CARTY: Is that you, Mr. Vail? We are waiting now for Honorable George McAneny, President of the Board of Aldermen, who is going to talk to Mayor Rolph, of San Francisco, but the Mayor, you know, as you have heard it, is talking to the audience.

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(Reply.)

MR. CARTY: Everything is going fine, Mr. Vail.

Is that you, Mr. Rolph?

(Reply.)

MR. CARTY: Everything is going fine, Mr. Vail, and the line is working splendidly.

To the Mayor of San Francisco President McAneny said in part:

PRESIDENT MCANENY: How do you do, sir? I am very glad, indeed, to add to the greetings of the Mayor another word for our Board of Aldermen. I shall not detain you long, but I may assure you that we are all tremendously interested in everything that you are doing, over the wire to-day and through the next several months. I should be glad, if you are able, to have you send the greetings of my Board to your own local legislature. And I did not fail to catch your—hello! I say I shall be glad, if you can, to have you repeat the greetings of my board to your own local legislature. I did not fail to catch your remark to Mayor Mitchel, that we should keep in mind the admonition about "going West, young man." (Laughter.) I want to tell you that a great many of us will take that advice during the next few months.

Mr. Prendergast, the Comptroller of the City of New York, next talked with Mr. Moore, President of the Panama-Pacific Exposition.

COMPTROLLER PRENDERGAST: This is Mr. Prendergast, Comptroller Prendergast. I saw you when I was out in San Francisco last May.

* * * * *

COMPTROLLER PRENDERGAST: It is a great delight to talk to you to-day for two reasons: One, I am glad to talk to San Francisco, and secondly, it is the first time I have ever had a telephone talk that I did not have to pay for. (Laughter.)

Mr. Bethell spoke with President Moore, and announced that Mr. Carty himself would exchange a few words with Mr. Doolittle in San Francisco. Mr. Doolittle is a telephone pioneer.

MR. CARTY: Is Mr. Doolittle there?

(Reply.)

(There is so much applause out there that he cannot do any talking until it subsides.) (Applause and laughter.)

MR. CARTY: Is that you, Tom?

(Reply.)

MR. CARTY: Say, Tom, this sounds better than the first long distance line did. Don't you remember the two copper wires we strung from Boston over to New York?

(Reply.)

MR. CARTY: That really proved that copper wire was the thing to use, and that hard drawn wire was the right sort.

Now, Tom, I am glad that you are out there to talk over this very long line. You have been preaching long distance service all your life, and we are very happy to have you there and be able to talk to you.

Mr. Doolittle is seventy-four years old, and retired, and it is a great satisfaction to us all to have him out there at the end of the line, rounding out his career.

Mr. Bethell then spoke to Mr. McFarland, who also wanted to speak to Mr. C. E. Yost, President of the Nebraska Telephone Co., who was present in New York at the guest table. Evidently Mr. McFarland was surprised to know this, as the conversation indicates:

MR. BETHELL: Hello! Mr. McFarland. Is that you, Mac? Mr. McFarland, we have quite a number of people here, and among them a great many friends of yours. First, I want to just greet you across the continent in behalf of the New York Telephone Company and the A. T. & T. and to say that Mr. Yost, Mr. Sunny, Mr. Gentry, Mr. Pettingill, Mr. Williams, Mr. Kilgore, Mr. Moran, Mr. Alling, and Mr. Nime are all here, and all send their greetings to you. (Applause.)

Good-bye, Mac.

MR. BETHELL: Is Mr. Yost here? Why, yes (Aside). I wish to say that Mr. Yost is the dean of the presidents of our associated companies. He objects to my using that word, but it fits him so well, that I must do it. I am going to ask Mr. Yost to say a few words to Mr. McFarland.

MR. YOST: Hello, how are the wife and kids? This line talks up pretty well, doesn't it?

MR. CARTY: Mr. Yost is speaking to you now, Mac.

MR. YOST: Hello, Mac!

(Reply.)

When are you coming east?

(Reply.)

That blooming Exposition is going to take all your time, surely. All the old boys are here, and they all send the kindest greetings.

(Reply.)

No, I am not in Omaha. I am in New York. (Laughter.)

(Reply.)

All right. Well, I can hear you very plainly indeed, Mac. Good-bye.

MR. BETHELL: This ends the formal talk, in which you will not participate, but an arrangement of telephones will be found in each of the rooms by which all of you may listen to these conversations across the continent, and the conversations will be kept up. Meanwhile, I would like to detain you just a few moments for another sort of pleasure. I know it will be a great pleasure to all of you to hear a few words from the Mayor of New York. (Applause.)

Mayor Mitchel Addresses the Audience

MAYOR MITCHEL: Dr. Bell, Mr. Bethell, and ladies and gentlemen:

It is a very great pleasure, of course, for all of us to be able to participate in this ceremony to-day, which marks the inauguration of telephone service between San Francisco and New York. I think nothing could testify more loudly to the business enterprise and scientific achievement of Americans than the perfection of the telephone service of the country to a point which permits conversation to be held between San Francisco and New York.

I am sure that we, of New York, are very proud to be able to own a company that has achieved this, as one of our own here in New York. We feel that it is an achievement for the City of New York.

I know that you all join with me in extending the heartiest congratulations to the engineers and officers of this company who have been able to bring this about, and in wishing them the same measure of success in the future as has attended them in the past. (Great applause.)

Mr. Vail's Tribute to Mr. Carty and His Subordinates

MR. BETHELL: I have a message from Mr. Vail which I would like to read, despite Mr. Carty's modest protest:

"Mr. Carty:

"Congratulations to the man who by his personality, initiative and the practical application of his wonderful mastery of the telephone service in particular and of electrical science in general has brought about such results.

"What entitles you to words of appreciation and thanks, is not the achievement of bringing the extreme limits of our country together for intercourse, so much as the tremendous, marvelous improvement which has been brought about in the whole service upon which the public are now so dependent.

"You have more than accomplished that which you dreamed of five years ago, and that which you have accomplished stands as your sponsor for making tangible, during the next five years, the dreams now in your mind.

"Subordinate to yours, but still large, is the credit due to your staff of scientists and experts who have absorbed your enthusiasm, caught your spirit, and so successfully seconded your efforts.

"To them and to you, the world and the Bell System owe an appreciation which I am but feebly expressing.

"THEO. N. VAIL."

(Great applause.)

Mr. Carty's Tribute to His Subordinates

MR. CARTY: Of course, it is such a leader as that, who brings out all there is in men. All of my men and all of our men know that these words are intended for us all.

When, at four o'clock this morning, I was a little bit concerned about the sleet and I wished to find out what the state of affairs was, I then saw a vision of the Bell System at work.

This is not a firing line, but in a way it is analogous to a firing line. It is not a firing line 350 miles long, but it is a line of peace 3,400 miles long east and west, and 1,100 miles long north and south, with 200 more to be added to-night, when there is to be a celebration in Boston.

In order to insure the integrity of these circuits, we made some extra preparation. It would seem that they were elaborate. But I found that only twenty-five per cent. more of our staff was at work than is ordinarily at work.

In the directors' room I hope that each of you will have an opportunity of seeing the great map, because that represents the lines of the Bell System. There are about 1,500 men scattered over this line, from this room where temporary headquarters are established and all of these men are co-ordinated. I think it is true that never before have men been co-ordinated over such a vast length of line from one point. We have men in the Sierras with snow shoes and men down in the southern land with automobiles

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and bicycles. We have men on the plains, in the bad lands, with mules, and others with saddle horses, and we have men on foot. There is no section of this vast land but what, if word is given here, a man will reach it inside of two hours, and in other sections it can be reached instantly. This morning, when I called up in a routine fashion, one of the men had gone off duty and another had come on. I wanted to know how things were going, and I got the temperature of almost every foot of that line. Sleet was forming in New Jersey three-quarters of an inch thick. In the neighborhood of Pittsburgh trouble was brewing. The Midland to Boston was out, but at three o'clock there were three men at work on it and it was fixed. Out in the middle west there was trouble. I was, as it were, feeling the pulse of the organization all over the line. I went back to bed because there was nothing to be done but wait; and I slept until eight o'clock. Then I found out that at Scranton it was falling off and that out west, at Chicago, it was cold and clear. Of course, Jekyl Island could not fail, because such a thought as that never could enter our heads.

I wish that I could convey to you the enthusiasm, the ability, the faithfulness of the men and women working on this project to-day. It seems large. It is like a great maneuver. It has taught much, it has taught us as much about our system as any maneuver would teach an army. There is much for the army to learn here, because any one of those fifteen hundred men might have represented a colonel, or a commander of a brigade, or any other number of men. Battles are now fought by telephone; and, to be able to manage the telephone, to get the messages back and forth, to have a good understanding at the different ends of the line, and to be a good telephone operator, is now becoming a part of the duty of the Commanding General.

So that, from that point of view as from one thousand others, there is much to learn.

I mention the thought to say that we are proud of these men who are scattered all over that map to-day, who are not here in this nice warm room to hear these words of praise passed out to the Chief Engineer; but I am glad to say one thing: that they all know that I know what they are doing, and where the praise belongs, and I never miss an opportunity to pass it down along the line. (Applause.)

It is, of course, worth living for to hear such praise from Mr. Theodore N. Vail. But the way the praise works in the Bell System, when it is received, is not to give a man the big head, but it is to make him think seriously, and wonder whether he deserves it, and if he does not, he is impelled by the strongest possible movement to get out and begin to deserve it, if he does not already. Because the way to try to live up to the reputation that is passed out in this way is a task of infinite magnitude for him. But that is the way it works in the Bell System. And one of the mottoes that I have put out to the boys, and it is really the unwritten motto of the Bell System, is the motto that sustains all these men away from the limelight. Every one would stay at the post until they died—so would the operators; they have never left a post of duty in time of flood, conflagration, or cyclone—neither have our men. And the motto which I have suggested for them and which they live up to is:

"'Tis not in mortals to command success,
But we'll do more, Sempronius,—
We'll deserve it."

And they all deserve it, and, so far as in my power lies, I am going to help them achieve it.

Dr. Bell's Address

MR. BETHELL: I have great pleasure in calling upon Dr. Bell to favor us. (Great applause.)

DR. BELL: Mr. Chairman, ladies and gentlemen:

Mr. Vail's picture is just over my head. Every word that Mr. Vail says in that letter of endorsement of Mr. Carty I endorse and believe in thoroughly, and to-night I think that the success of our demonstrations of to-day, is very largely due to Mr. Carty, and to his able body of assistants here. (Applause.)

It is with very great interest that I look upon this model of the old telephone—the first speaking telephone ever made. This is a reproduction of it, which I hold in my hand, and to hear this instrument talk between New York and San Francisco is a revelation, showing convincingly to my mind that the telephone system of to-day is the product of many minds, and not the product of one alone. This old instrument would not have spoken to San Francisco in the old days of 1875 when it was built. It is due to the many minds at work in the telephone company, and their experiments, and the researches of others that the difficulties of transmission on long lines have been overcome, and now this little instrument, that feebly talked in 1875, now serves to carry on a conversation with my old friend Watson in San Francisco. It is really very touching to me to converse with Mr. Watson over that old instrument. He and I were the first to use the speaking telephone. As Mr. Carty has very properly remarked, I was the first to speak, and Mr. Watson was the first to hear; for I could not hear anything that he said, but he seemed to hear a good deal of what I said. (Laughter and applause.) And it was that appreciation that encouraged me to believe that the telephone really was a concrete thing at last.

This instrument, interestingly enough, I think, came into existence first as a theoretical conception. The instrument just as you see it here was invented in the summer of 1874, during a visit that I paid to my father and mother in Brantford, Canada. It was a theoretical conception. It was not made for a year afterwards. You can well imagine, as you look at that crude construction, that it might be apparent that you could not expect that the vibration of a little steel armature in front on an electro-magnet would produce electrical undulations of sufficient power to amount to any practical result. It was thought to be necessary to increase the amplitude of these electrical undulations; and so, for a whole year, attention was taken up in trying to develop what is now known as a variable resistance plant in which the strength of the current should be dependent upon a battery, and not simply created by the action of the voice. So that it was a whole year before this instrument was made. Mr. Watson made it in June, 1875, and it was a very difficult thing to hear it talk.

In 1876, the instrument, in a little improved form, was exhibited at the Centennial Exposition; and if it had not been exhibited there, it might have been many years before it would have been known to the world. The instrument was very slightly different from this.

Later on, in 1876, attempts were made to use it upon a real telegraph line. Hitherto experiments had only been made from one room to another in the same house.

The first experiment on a real telephone line was made in Brantford, Ontario, on the lines of the Dominion Telegraph Company; but it was only transmission in one direction. A person talked to the transmitting telephone, the sounds were received by a telephone with which we could not talk back, and communication in the reverse direction had to be made along another telegraph wire.

Later on, however, we were enabled to get reciprocal communication in Boston, and especially on a very famous occasion when Mr. Watson, in Cambridgeport, and I, in Boston, conversed over what was a magnificent distance in those days—two miles of telegraph wire! Just think of it! Two miles! It was a great triumph. The conversation that took place was the first reciprocal conversation that was ever held over a telephone, over two miles of wire. Every word was taken down at either end, and in the newspapers of the day you will find the parallel columns of what was heard at Boston and what was heard in Cambridgeport, and it was Mr. Watson and I who held that conversation. It is especially interesting, therefore, for me to be able to greet my old assistant, Mr. Watson, over 3,400 miles of space, and even talk to him through the same telephone that we used to talk over in the old days. It shows me what great progress has been made by the telephone company in overcoming the difficulties of long-distance transmission until now we actually have a trans-continental line in successful operation.

I cannot tell you how deeply I feel at seeing this old instrument here. It was a dream then. It has become a reality now. And that reality has been accomplished through the agency of Mr. Vail, Mr. Carty, and all the good men of the American Telegraph & Telephone Company. (Applause.)

MR. BETHELL: It seems that the President of the United States, Mr. Wilson, is not yet quite ready to talk, and instead of waiting just as we are gathered here, we think after a picture is taken, we will go into the various rooms so that all may take part in those conversations, and when the President is ready to favor us, we shall again, perhaps, assemble here.

MR. CARTY: There has been a request that Dr. Bell say to Mr. Watson, the first words over the old telephone, and Dr. Bell has kindly said that he would do so. We will get Mr. Watson on the other end of the wire in San Francisco. It will only take a moment, and we can all hear them talk.

MR. CARTY (Aside). Mr. Watson is coming to the telephone. Hello, Mr. Vail. Hello, Mr. Vail.

(Reply.)

MR. CARTY: We are going to have Dr. Bell—by request Dr. Bell is going to speak through the old telephone again

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to Mr. Watson and use the first words that they employed.

(Aside.) Mr. Watson must be rescued from a group of reporters.

DR. BELL: I have been asked to say to you the first words that you understood over the telephone, and through the old instrument, "Mr. Watson, come here, please, I want you." (Laughter and applause.)

(Reply.)

MR. CARTY (Aside): He says it would take him a week to get there now. (Great applause.)

5:45 P. M.

MR. BETHELL: The President of the United States is now about to talk to Dr. Bell in New York and Mr. Watson in San Francisco.

The President Speaks

PRESIDENT WILSON: I want to say to you, Mr. Watson, that I consider it an honor to be able to express my admiration for the inventive genius and scientific knowledge that have made this possible and my pride that this vital cord should have been stretched across America as a sample of our energy and our enterprise. I want to convey to you my personal congratulations, sir.

MR. WATSON (Speaking from San Francisco): I thank you from the bottom of my heart, Mr. President. I consider it a great honor to talk across the continent for the first time with the President of the United States.

MR. CARTY (Speaking from New York): Now, Mr. Watson, we will introduce Dr. Bell, who is here, to the President.

DR. BELL: I am very glad to have the opportunity of talking to you, Mr. President, over the first trans-continental telephone line.

PRESIDENT WILSON (Washington): I am very much obliged to you. I want to congratulate you very warmly on this notable consummation of your long labors and remarkable achievements. You are justified in feeling a great pride in what has been done. I think this will be remembered as a memorable day. I convey to you my warm congratulations.

DR. BELL (New York): Thank you very much for your kind words, Mr. President. I think we have always got to remember that the telephone system of the United States is the product of a great many minds and not of one alone. I thank you very much.

PRESIDENT WILSON (Washington): But there has been one leading mind.

DR. BELL (New York): Thank you.

PRESIDENT WILSON: Thank you. Goodbye.

MR. CARTY: Is Mr. Vail there? Hello, Jekyl Island.

(Reply.)

MR. CARTY: Mr. Vail has talked today from Jekyl Island up to New York and then across the Continent, making a distance of 4,500 miles.

Hello, Mr. Vail.

MR. VAIL: Who is this?

PRESIDENT WILSON: This is the President.

I am glad to hear your voice. I have just been speaking across the Continent this afternoon.

MR. VAIL: Oh, yes.

PRESIDENT WILSON: Before I gave up the telephone, I wanted to extend my congratulations to you on the consummation of this remarkable work.

MR. VAIL: Thank you.

PRESIDENT WILSON: I am very sorry to hear that you are sick.

MR. VAIL: I am getting along very nicely. I am sort of a cripple, that is all.

PRESIDENT WILSON: I hope you will be well soon. Good-bye, Mr. Vail.

MR. VAIL: Thank you. Good-bye, Mr. President.

President Wilson spoke first to President Moore, of the Panama-Pacific Exposition, saying:

It appeals to the imagination to speak across the continent. It is a fine omen for the exposition that the first thing it has done is to send its voice from sea to sea. I congratulate you on the fine prospects for a successful exposition. I am confidently hoping to take part in it after the adjournment of Congress. May I not send my greetings to the management and to all whose work has made it possible and has made it the great event it promises to be and to convey my personal congratulations to you?

At eight o'clock the same evening the Boston-San Francisco line was formally opened, and a large group of officials and guests in New York remained to "listen in." An interesting feature of this celebration was a conversation in Chinese between Loo Cum Chu, Manager of the Chinese Telephone Exchange of the Pacific Telephone & Telegraph Co., San Francisco, and Wong Y. Sue, Chinese Passenger Agent of the Southern Pacific Co. at Boston.

INCIDENTS

Dr. Bell sent his voice over a 3,000-mile trial trip to test the efficiency of the reproduction of the first crude telephone in talking to the other side of the continent. A circuit was established from the model of the 1876 telephone in President Vail's office, through the switchboard at Omaha, Nebraska, and back to New York. Here the second terminal was a standard instrument in a room adjoining President Vail's office.

Dr. Bell first listened at the modern telephone receiver while Mr. Carty talked into the model of the original instrument. Dr. Bell could hear Mr. Carty's words perfectly.

The minutes passed and as Mr. Carty continued to talk into the old device from New York through Omaha and back to New York to Dr. Bell, the excitement of the venerable scientist grew. "Let me use the old instrument," he cried, and he hurried into the room where Mr. Carty was talking.

The two men changed places. This time Dr. Bell talked into the replica of the first telephone instrument while Mr. Carty listened at the modern telephone. Dr. John A. Brashear, of Pittsburgh, an old friend of Dr. Bell and formerly director of the Allegheny Observatory and an inventor and manufacturer of astronomical instruments, was standing near Mr. Carty and Mr. Carty handed him the instrument. "Hello, Dr. Brashear," said Dr. Bell. "I recognize your voice. You are in the next room, but we are talking over 3,000 miles of wire." The two men conversed for a short time and then Dr. Bell "hung up" by replacing the box-like instrument on the table. He turned to the men gathered around him. "It's wonderful!" he said. "Simply wonderful!"

Melville Bell Grosvenor, the thirteen-year-old grandson of Alexander Graham Bell, is the first boy to talk across the continent. The boy's father, Gilbert H. Grosvenor, of Washington, D. C., is director of the National Geographic Society and editor of the *National Geographic Magazine*.

Mr. Grosvenor spoke with San Francisco and then turned to his son. "I want you to talk, too," he said. "This is something you will never forget." He spoke into the transmitter again. "My son wishes to talk with you."

The youngster took the instrument. "Hello," he said, in his high pitched voice. The reply must have been an expression of pleasure at "meeting" the grandson of Dr. Bell, for the boy answered, "I am very glad to meet you, too. How is the weather out there? Hello, yes, I can hear you perfectly." And then it seemed suddenly to dawn upon him that he was sending his voice from the Atlantic to the Pacific coast and he became embarrassed and gave the instrument back to his father.

Dr. Bell's party consisted of himself and Mrs. Bell, their daughters, Mrs. Gilbert H. Grosvenor and Mrs. David Fairchild, Mrs. John J. Carty, Messrs. Gilbert H. Grosvenor and Edwin P. Grosvenor, and Dr. and Mrs. Bell's grandsons, Melville Bell Grosvenor and Alexander Graham Bell Fairchild.

The first members of the New York police force to talk over the Transcontinental Line to San Francisco were Detective Sergeants August Mayer and Grover C. Brown.

To celebrate the event, the Mayor of Petaluma, Cal., had the fire bells rung for one hour, beginning at 1:15 P. M. San Francisco time.

The Transcontinental Telephone Line is open commercially. The rate established from New York to San Francisco is $20.70 for three minutes' conversation and $6.75 for each succeeding minute. But it must be remembered that the rate is for the round trip, and that about $2,000,000 worth of plant will be at the exclusive use of the patron during the period of the conversation.

"It's wonderful; simply wonderful."—*Dr. Bell.*

"It will take me five days to get there now."—*Mr. Watson.*

"You have more than accomplished that which you dreamed of five years ago, and that which you have accomplished stands as your sponsor for making tangible, during the next five years, the dreams now in your mind."—*Mr. Vail to Mr. Carty.*

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Statement by Mr. Vail

At the Centennial Exhibition at Philadelphia, the exhibit of the Bell System consisted of two telephones capable of talking from one part of the room to another. Faint as the transmitted speech then was it became at once the marvel of all the world, causing scientist as well as layman to exclaim with wonder.

Starting with these feeble instruments only, the Bell Company, by persistent study, incessant experimentation and the expenditure of immense sums of money, created an entire new art, inventing, developing and perfecting, making improvements great and small in telephone, transmitter, line, cable, switchboard, and every other piece of apparatus and plant required for the transmission of speech.

As the latest product of this unceasing organized effort there has been dedicated to the service of the public to-day a transcontinental telephone line three thousand six hundred miles long, joining the Atlantic and the Pacific and carrying the human voice instantly and distinctly between San Francisco and New York and Boston and Washington.

This telephone line is part of the Bell System of twenty-one million miles of wire connecting nine million telephone stations located everywhere throughout the United States and giving to the American people telephone service unparalleled among the nations of the earth.

THEO. N. VAIL.

Statement by Mr. Bethell

The completion of the transcontinental line is not only an epoch-marking event in scientific development, but also the opening door to better conditions, commercial and social, throughout the nation. It means the breaking down of old barriers. By facilitating the exchange of information and ideas it brings the most remote points in the country closer together than were points lying within a single state a quarter of a century ago. It broadens mutual understanding and appreciation and thus aids tremendously in the advance of civilization.

This is one of the romantic and inspiring steps in the progress of the art as developed by our great and always mutually helpful organization which embraces in its ranks more than 150,000 men and women.

To the organization as a whole this event will have a significance that cannot be over-estimated; it will exert an influence that will not end with the day but go on working for better and greater results through years to come.

In some way, directly or indirectly, every efficient man and woman in the organization has contributed something to the achievement and, therefore, as a whole the organization merits congratulations.

U. N. BETHELL.

Statement by Mr. Carty

This greatest of telephone lines, which to-day has been dedicated to the service of the public, must always be distinguished because through its copper wires the voice of the Chief Magistrate of this nation has, for the first time in our history, been transmitted from the seat of Government at Washington westward thirty-six hundred miles to the shores of the Pacific. Over this line the voice of President Wilson was carried with magic speed across rivers and plains and mountains, instantly reaching San Francisco where in clear tones it spoke his message of congratulation to men of achievement.

Unable to be present with us in person, Mr. Theodore N. Vail has nevertheless taken part in these ceremonies. By using the wonderful Bell System of organized men and organized wires he has talked to us here at New York from an island eleven hundred miles to the south, near the coast of Florida. From there he has spoken through the length and breadth of our land to the State of California, forty-four hundred miles away, thus attaining the longest distance ever achieved by the voice of man.

We are filled with grateful feelings that Alexander Graham Bell and Thomas A. Watson have to-day talked to each other over this now historic line. Dr. Bell was the first to conceive of the true method and apparatus for transmitting speech electrically, and Mr. Watson, following exactly the directions given to him by Dr. Bell, constructed with his own hands the first telephone. Bell was the first among men to talk by the electric telephone, and Watson was the first to hear.

There is before us an exact reproduction of this electric speaking telephone employed by Bell and Watson when first they talked to each other by wire. Through this instrument Dr. Bell has again talked to Mr. Watson, but this time how vast is the distance and how great the triumph.

Of course, he was not heard by any means so well as when he used our standard transmitter, but well enough to be understood, we may be sure, and loud enough to excite a most pleasing sentiment.

This original type of telephone talking over one of our modern lines, spoke across the continent more distinctly than it ever did from one room to another over the best line of former days. Thus does this homely first instrument give testimony to the marvelous improvements made in its plant by the Bell Company during these intense intervening years.

These improvements, incredible as they are in number and magnitude, are but one stage of our never-ending progress. They have opened to us new fields filled with the richest promise. They are not the end. They are but the beginning of the future Bell System which in effectiveness and useful service we confidently promise will surpass all that has gone before, so that in the future, as we have in the past, we will, in all things pertaining to the art of telephony, keep secure for our country the foremost place in all the world.

J. J. CARTY.

The Invisible Plant

A Yale professor brought a class of engineering students to New York, the other day, on a tour of inspection. They visited several of the large electrical plants in the city and finally marched in on J. J. Carty, Chief Engineer of the American Telephone & Telegraph Company.

"We have come to see your plant, Mr. Carty," said the professor.

"I'm sorry," answered the first of the telephone engineers, "but you can't see it."

There was a strained pause for a moment and then Mr. Carty, smiling from behind his spectacles, led the student up to a map of the United States over which lay a maze of black lines, showing the Bell system. He told them that they could not see the telephone plant because there wasn't a man living who had ever seen it, or ever could see it. If the professor were to take his class down to the Battery, said Mr. Carty, and attempt to walk up-town to Cortlandt Street, showing them the telephone plant in that part of the city, he would fail. By the time they got to Cortlandt Street the plant would have changed. Behind them men would be putting new parts of the plant up elevator shafts, onto office desks, under the streets they had just left.

On the map which Mr. Carty showed the students there was a gap between Denver and San Francisco. But now the engineers of the American Telephone & Telegraph Company have filled the gap and a part of the telephone plant reaches without a break 3,400 miles across the continent. But the transcontinental line is only part of a plant that is woven into the fiber of the continent. Every cross-roads store with the familiar blue bell sign swinging above its door is as much a part of the telephone plant as the switchboard in the big city exchange.

Twenty-one million miles of wire connect nine million telephones of the American Telephone & Telegraph Company and associated and connected companies, giving service to 100,000,000 people. That is the statistician's description of the plant to-day. But by to-morrow he will be changing his figures again. For he is dealing with a living thing, and life inevitably implies constant change.

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Some of the Leading Personalities Who Made the Transcontinental Telephone Line

Alexander Graham Bell, Inventor of the Telephone — Thomas A. Watson, Associate of Prof. Bell in 1876

Theodore N. Vail, President American Telephone & Telegraph Company

U. N. Bethell, Senior Vice-President, A. T. & T. Co. — J. J. Carty, Chief Engineer, A. T. & T. Co.

C. E. Scribner, Chief Engineer, Western Elec. Co. — Bancroft Gherardi, Engineer of Plant, A. T. & T. Co.

Frank B. Jewett, Asst. Chief Engineer, Western Elec. Co. — Michael Idvorsky Pupin

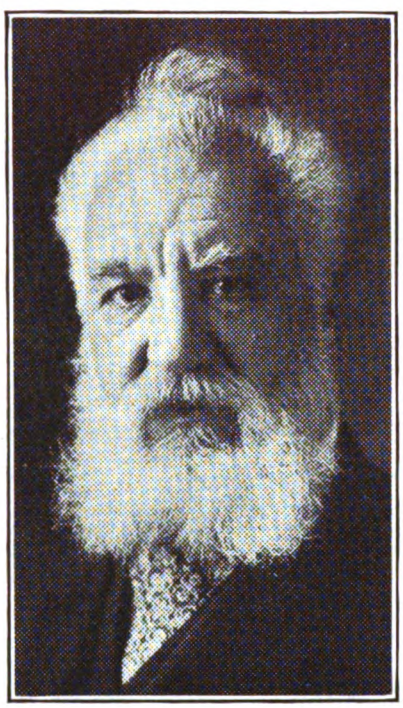
ALEXANDER GRAHAM BELL

Alexander Graham Bell has had the rarest of human experiences. He has lived to see the dreams of his youth come true. When he talked into a replica of the first telephone transmitter at the celebration of the completion of the New York-San Francisco telephone line, there were nine million telephones in the Bell system serving 100,000,000 persons. Forty years ago Bell talked of sending the human voice over electric wires and men gaped at him in pity.

The inventor of the telephone was born in Edinburgh, Scotland, on March 3, 1847. He was the son of Alexander Melville Bell, the dean of British elocutionists and inventor of the system of "Visible Speech." The boy was educated at Edinburgh and London, and acquired a smattering of music, electricity, and telegraphy. At the age of sixteen he taught elocution in British schools, and by the time he was of age he had met several noted scientists who encouraged him in his studies of sound.

In 1870 he went to Canada and the next year came to Boston as Professor of vocal physiology in Boston University. His system of teaching deaf mutes won immediate recognition, and his success encouraged him to open a school of his own. He went to live at the home of five-year-old Georgie Sanders, one of his pupils, in Salem and in the Sanders cellar after school hours he started a series of inventions that were to culminate in the telephone. For three years he worked with tuning-forks and magnets and batteries and in 1874 he had evolved the idea for what he called his "Harmonic Telegraph." This was a device for sending a number of Morse messages over a single wire at the same time by utilizing the law of sympathetic vibration. Bell used a telegraph transmitter and receiver, an electro-magnet, and a flattened piece of steel clock spring.

One day in the winter of 1874 Bell took his harmonic telegraph to the electrical work-shop of Charles Williams at 109 Court Street, Boston, where Thomas A. Watson was employed. Watson made six instruments at Bell's instructions and thereafter devoted most of his time to working out in brass and iron the ideas that came pouring out of Bell's active brain. The two young men labored day and night at their experiments in the Williams workshop and out at Salem. All the while there was a dream that haunted Bell. It was that somehow, some day, he could get an electric wire to carry the human voice. On June 2, 1875, after months of countless experiments on the harmonic telegraph, something happened that convinced Bell that at last he was on the right track. One of the transmitter springs of his telegraph instrument stuck and the magnetized steel generated a current that sent a faint noise over the electric wire to Bell's receiver. Thereafter it was a question of working out details. This was all the proof Bell needed to persuade him that the principles were right.



Alexander Graham Bell

On March 10, 1876, in a boarding-house at 5 Exeter Place, Boston, where the two were experimenting, Bell in his room on the top floor put his mouth to the telephone and said:

"Mr. Watson, come here, I want you." Watson came rushing into the room shouting: "I heard you; I could hear what you said."

Bell decided that he had made sufficient progress to justify him in exhibiting his invention at the Philadelphia Centennial. He was shoved into a corner and overlooked by the public until Dom Pedro, Emperor of Brazil, who knew Bell as a master of acoustics, happened along. Bell explained the telephone and persuaded the Emperor to listen at a receiver while he talked. Dom Pedro dropped the instrument, exclaiming: "My God, it speaks," and the amazement of the distinguished visitor attracted attention to its cause. Bell and his invention were soon the main features of the Centennial.

Bell returned to Boston to persuade an incredulous public that he had a practical means of instantaneous communication. It was no easy task. With a few loyal friends behind him he did heroic missionary work, lecturing up and down New England, everywhere prophesying that some day men would talk as readily from Boston to New York as from one room to another. The press reflected the universal scepticism; funds ran low—those were dark days for the young inventor. But finally in August, 1877, when Bell's patent was sixteen months old there were 778 telephones in use and the pioneers decided that the time had come to organize the business. "The Bell Telephone Association" was created with no capital and a membership of four men,—Bell, Watson, Gardiner G. Hubbard, Bell's father-in-law, and Thomas Sanders, father of Bell's pupil and sole financial backer of the telephone.

Bell was an inventor, not a business man, and after 1877 he had little active connection with the organization of the telephone industry. He married in that year and went abroad to help introduce the telephone in England. But before he sailed, he suggested to Watson that as soon as the telephone became a matter of routine business the two should begin experimenting on flying machines. Watson turned to building battleships but Bell, always a long way ahead of his time, took up the problems of flight with his characteristic energy.

In February, 1913, *The Scientific American* printed an account of patent No. 1,050,601 just issued. Dr. Bell received this for a vertical balancing rudder for aeroplanes, thirty-seven years after receiving patent No. 174,465 for the telephone. In May, two years ago, he announced an attempt to be made by one of his assistants to cross the Atlantic in an aeroplane in seventy-two hours. To invent what has been called one of the seven modern wonders would satisfy most men, but it did not satisfy Alexander Graham Bell.

While Theodore N. Vail and his associates were busy making Bell's membrane transmitter a universal household servant, Professor Bell was inventing a telephone probe for the painless detection of bullets in the human body and receiving for it the degree of M.D. from the University of Heidelberg. In 1883 Dr. Bell's name once more appeared before the public, associated this time with the names of C. A. Bell and Sumner Taintor in the invention of the graphophone. A little later he returned to his first love—the study of acoustics—and organized a movement for the teaching of speech to the deaf along the lines of visible speech.

It has always been Dr. Bell's practice to keep complete records of his scientific researches, and the volumes into which

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these records are bound now number several hundred. They tell a story of an intellectual life of almost unprecedented activity. A recent visitor to Dr. Bell's home at Washington was permitted to examine records made from 1908 to 1913. There were thirteen volumes, each as thick as a law-book and each containing 500 pages. The index to one of these volumes covered such subjects as experiments on air-craft, the scientific breeding of sheep, the utilization of waste heat, a new metric system, experiments in preserving food, notes on eugenics, and the biological history of a cat. Dr. Bell said to his visitor, and this was but two years ago:

"I have never felt stronger intellectually. My mind has a greater power of concentration than it ever had. It seems to be quicker and it does not tire along the lines in which I am interested. I sometimes work for 18 hours at a stretch."

Dr. Bell has received many honors. The French Government awarded him the Volta Prix in 1880. He received a medal from the London Society of Fine Arts in 1902. He is an officer of the French Legion of Honor. At one time he was President of the National Geographical Society and he is a member of the National Academy of Sciences, the American Philosophical Society, a fellow of the American Academy of Arts and Sciences, and a member of the American Association for the Advancement of Science. He spends his winters in Washington and his summers near Baddeck, N. S.

THOMAS A. WATSON

Thomas Augustus Watson, associate of Alexander Graham Bell and first superintendent of the Bell Telephone Company, was born at Salem, Mass., on January 18, 1854. He attended the public schools of Salem until he was thirteen years old when he began to earn his own living. He had a love for science that sundry jobs such as clerking, bookkeeping and carpentering failed to satisfy and he did not find a vocation that really held his interest until he entered the electrical workshop of Charles Williams at 109 Court Street, Boston. Mr. Williams encouraged individual initiative among his employees, and Watson at work among call-bells, annunciators, galvanometers, telegraph keys, relays, registers and printing telegraph instruments, soon showed the good effects of such a policy. He experimented for himself in the fascinating fields that the new science of electricity was opening out, and after hours he delved into other branches of science. A steam-engine that he built when business was slack was the embryo of the biggest shipbuilding plant in the United States, of which he was many years later to become the head.

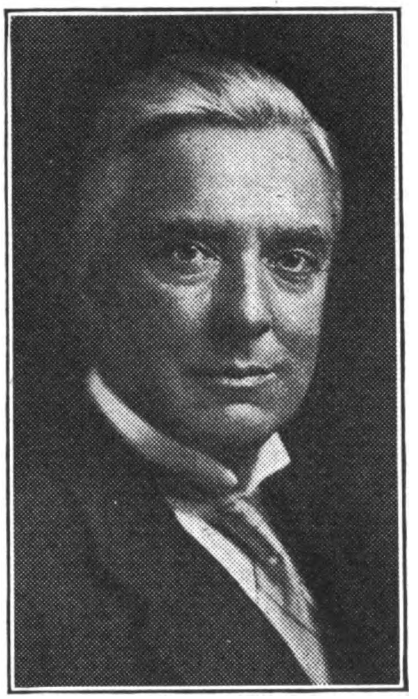
Williams, though his force never numbered more than 40 or 50 men, had one of the largest and best fitted electrical shops in the country, and to it there came inventors who wanted their ideas set down in brass and iron. Because of his mechanical ability and ready comprehension of new principles, Watson was their favorite workman.

He was busy with some experimental torpedo exploding apparatus which he was preparing for Moses G. Farmer, when Alexander Graham Bell came into the shop one day in the early winter of 1874. At that time Bell was full of his designs for a "Harmonic Telegraph." When Watson finished his work on the torpedoes he made half a dozen pairs of the harmonic instruments for Bell. This was the beginning of an association that was to continue for years. Bell's active mind provided enough ideas to keep Watson steadily employed. The two experimented together, out at the Sanders house in Salem, where Bell was living, and in the Boston workshop until June 2, 1875.

On that day while the two young men were at work on the exasperating harmonic instruments, one of Watson's transmitter springs stuck, and the slight noise that Watson made in attempting to free it sounded in Bell's receiver. This was enough to convince Bell that a wonderful idea which he had some time before confided to Watson could be worked out. He dropped his harmonic telegraph scheme and set out to make electrical wires carry the human voice. All the experiments that followed concerned themselves with the working out of details.

On March 10, 1876, Bell and Watson had moved to a boarding house at 5 Exeter Place, Boston. They had run a wire from Bell's room on the top floor to a room below where Watson stood with a receiver at his ear. It was over this wire that Watson heard the first words ever uttered by the telephone.

"Mr. Watson, come here, I want you,"



Thos. A. Watson

said Bell, and up the stairs ran Watson shouting: "I heard you, I could hear what you said."

Watson was but twenty-two years old when the telephone was patented. Bell was seven years older. Upon such young shoulders lay the task of persuading a sceptical public that wires could talk. They had behind them, it is true, a small group of enthusiastic men, some of them willing to lend financial aid, but it was the missionary work done by Bell and Watson that turned the tide in the telephone's favor. Up and down the country went Bell telling what he had done, and for proof he let the myriad of scoffers hear Watson's voice across the wires. Watson recited poetry, sang songs, and shouted himself hoarse into the ears of audiences addressed by Bell. Although he spoke at every one of Bell's lectures, to this day Mr. Watson has never heard his associate deliver an address. He was the invisible but convincing testament to this new miracle's verity.

Fred Gower, a Providence newspaper man, was one of the earliest of the converts that these lectures were making on every hand. He proposed a scheme for a dual lecture in the course of which Watson spoke from a central point to two halls at the same time. It was at one of these, in which Watson talked from Middletown, Conn., to Bell at New Haven and Gower at Hartford, that Watson made his last appearance as *"deus ex machina."*

He let Gower tell the public what the telephone would mean and went back to his laboratory to make some of the lecturer's promises true. This was in 1877, and for two years Watson worked steadily at developing some of the principles of the art of telephony. The engineering department of the Bell Telephone Company consisted of Watson and two others. To-day Chief Engineer J. J. Carty of the American Telephone & Telegraph Company has 550 engineers and scientists at work under his direction. Mr. Watson's name is associated with the invention of the magneto-electric call-bell and with the automatic switch, which was the culmination of a series of experiments he started at that time. He held a number of offices in the first Bell Company and was Superintendent from 1878 until 1881.

In 1881 Mr. Watson's connection with the telephone industry ceased and he went abroad for a two years' rest. On his return to this country at a time when Dr. Bell began experimenting on airships, Mr. Watson became interested in battleships. He associated himself with those who were endeavoring to revive the glory of the days when every New England harbor was white with the shipping of the Seven Seas. From 1884 until 1900 he was a member of the shipbuilding firm of F. V. Wellington & Company.

By 1900 he had become one of the leaders of the shipbuilding industry and it was Mr. Watson who founded the great Fore River Ship & Engine Company at Quincy Point, Boston Bay. At this concern, one of the largest in the country, many of our navy's dreadnoughts now in service were constructed. The fame of the company went abroad and foreign governments sent in orders to Quincy Point.

In 1903 when the battleships Vermont and New Jersey, the protected cruiser Des Moines, and the destroyer MacDonough had been completed under Mr. Watson's direction, Rear Admiral Francis T. Bowles, head of the naval construction work, was called to the Presidency and Mr. Watson retired from active business.

In 1913 he delivered an address before the third annual convention of the Tele-

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phone Pioneers of America on "The Birth and Babyhood of the Telephone." This reminiscent account of the early days of the telephone by the man who had so active a part in its invention has since been put into pamphlet form and is considered one of the most valuable contributions to the history of telephony.

Mr. Watson is now living at East Braintree, Mass. He is a member of the American Association for the Advancement of Science, the Boston Society of Natural History, and the Massachusetts Horticultural Society.

THEODORE NEWTON VAIL

Theodore Newton Vail, president of the American Telephone & Telegraph Company, is a lineal descendant of John Vail, the Quaker preacher who settled in New Jersey in 1710. He was born in Carroll County, Ohio, July 16, 1845, and is the son of Davis and Phœbe (Quinby) Vail.

His grandfather, Lewis Vail, a civil engineer, went to Ohio in the early days and became prominent in that State as a builder of canals and highways. Stephen Vail, an uncle of Theodore Newton Vail, founded the Speedwell Iron Works near Morristown, N. J., where was built the machinery for the first steamship which crossed the Atlantic ocean. At these works Samuel F. B. Morse perfected and first operated the magnetic telegraph. Stephen Vail and his sons supplied Morse with money and Alfred Vail built the first telegraph instruments and also invented the dot and dash alphabet, known as the Morse code.

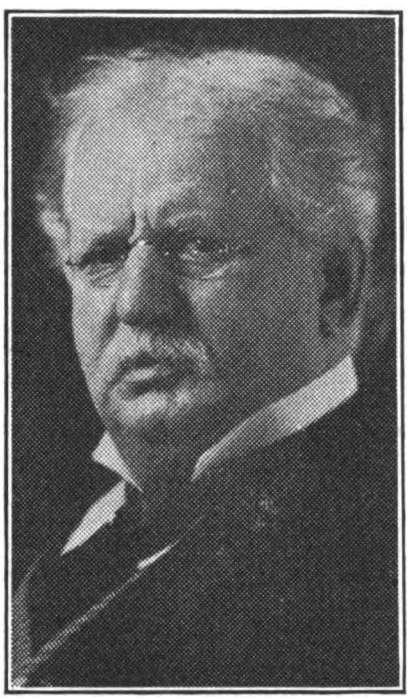
Davis Vail, father of Theodore Newton Vail, was born in Ohio, but at an early age went to New Jersey and became connected with the Speedwell Iron Works. He married there and afterwards went back to Ohio for a few years, during which time his son Theodore was born. When the boy was about four years old the family returned to New Jersey where they stayed until 1866, later moving to Iowa where his father became a farmer on a large scale.

On his mother's side Mr. Vail is connected with the prominent Quinby family of Morris County, New Jersey, his mother being a daughter of Judge Isaac Quinby and a sister of General Quinby, distinguished as a mathematician and a general of the Civil war.

Theodore Newton Vail received a thorough education in the old academy at Morristown, New Jersey, and after leaving school read medicine for two years with his uncle, Dr. William Quinby. During that time he acquired a working knowledge of telegraphy in a local office and when the family migrated to Iowa he went with them. Ambitious to strike out for himself, in about a year he got a position with the Union Pacific Railroad and became an agent and telegraph operator at a small station on that line. In 1869, through the friendship of General Grenville M. Dodge, Chief Engineer of the Union Pacific, he was appointed clerk in the railway mail service where his ability to systematize and organize was soon felt. At that time the railway mail service was in a very crude state and Mr. Vail prepared special studies on the question of distribution and dispatching of the mail which brought him quick recognition from the authorities at Washington and he was summoned to the capital and appointed Assistant Superintendent of the railway mail service under George I. Bangs. Thereafter he took a leading part in the development of the fast railway mail service.

In 1876 he was appointed General Superintendent, although at that time he was the youngest of the officers in the railway mail service. Following in the footsteps of his predecessor, he strengthened the Civil Service system and developed the railway mail service of the country into a state of efficiency.

In 1878 he was approached by Gardiner G. Hubbard, father-in-law of Alexander Graham Bell, and offered the position of General Manager of the American Bell Company, a company formed to exploit the telephone, a recent invention. Mr. Hubbard had become acquainted with the executive ability of Mr. Vail and had decided that he was just the man to take hold of the new invention and to organize and develop



Theo. N. Vail

the telephone business on the large scale which its promoters saw would be necessary when the world had become educated to the possibilities of the service.

Realizing that he had reached the limit of advancement in the railway mail service and having become intensely interested in the telephone itself, with a firm faith in its future, Mr. Vail accepted the position and immediately set himself to the task before him. He found many obstacles in the way, all of which were overcome. It was at first believed that the telephone was only good for local service, but Mr. Vail, with a larger conception of its utility, had visions of long-distance telephony far in advance of any one else, and one of his first achievements was to establish a long-distance line between Providence and Boston, and upon his initiative, improvements were made in telephone equipment and material so that little by little the obstacles were overcome and long-distance telephony extended until to-day New York talks to San Francisco.

In 1885 Mr. Vail resigned as General Manager of the American Bell Telephone Company and was elected first president of the American Telephone & Telegraph Company, resigning in 1887. In 1890 he resigned from the presidency of the Metropolitan Telephone & Telegraph Company of New York.

After retiring from active telephone work he purchased a large farm in Vermont, which he called the Speedwell Farms, and settled down to the raising of French coach horses, Welsh ponies, Jersey cattle, and Shropshire and Dorset horned sheep.

He spent some years abroad and in 1893 made a trip to South America where he became much interested in the Argentine Republic and obtaining a government concession near Cordoba, he built an electric power station. He also bought a horse-car line in Buenos Ayres, converted it into a trolley line, organized a company and equipped it with the best cars from the United States, bought out all competing lines, and gave the city a complete service. A company was organized, composed of British capitalists who operated the road, and for some time Mr. Vail had his headquarters in London; but finally, believing that the undertaking no longer needed his personal attention, he retired from the company activities in 1904 and returned to his farm at Lyndon, Vermont.

In 1907, urged by prominent officials of the Bell Telephone Company, he reentered the telephone field and again took the presidency of the American Telephone & Telegraph Company.

In 1910, the American Telephone & Telegraph Company having acquired a controlling stock interest in the Western Union Telegraph Company, Mr. Vail became its president and proceeded to reorganize the company along the lines which he had so successfully applied to the telephone business, greatly increasing its gross revenue, rehabilitating its equipment, and giving to the public new and improved service.

On April 15, 1914, the American Telephone & Telegraph Company having disposed of its interests in the Western Union by agreement with the Government, Mr. Vail resigned the presidency of the company and retired from the board of directors.

Besides being president of the American Telephone & Telegraph Company, Mr. Vail is director in many of its subsidiaries and also of the Bell Telephone Company of Canada.

He is a director of the Astor Trust Company of New York, a trustee of the American Surety Company of New York; president and a director of the New England Casualty Company; president and a director of the Lyndonville National Bank and of the Lyndonville Creamery Association, and many other corporations.

Besides his business activities, Mr. Vail has founded the Lyndon Agricultural School at Lyndon, Vt., in which he takes a keen interest. He is also a trustee of the Boston Museum of Fine Arts and a director of the Boston Opera House.

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UNION N. BETHELL

Union Noble Bethell, President of the New York Telephone Company, was born in Newburgh, Indiana, on September 12, 1859. He was graduated from Hanover College in 1879 and later received the degree of A.M. from that institution.

In a recent interview Mr. Bethell said: "Find out what you are fitted for, then go at it with all the energy in your nature. It took me ten years to find out what I really wanted to do, but since then there hasn't been any trouble. Have more irons in the fire than one, but be sure which is your favorite and stick to it with the greatest determination."

While he was heating irons and finding out just what he most wanted to do, Mr. Bethell was acting as Deputy Auditor of Warrick County, Indiana, and studying law at night. He entered the government service in 1881 and received his legal degree in 1885. He was admitted to practice in the District of Columbia and in Indiana and later in the Supreme Court of the United States.

As a special agent of the government he spent two or three years in the West and there he became interested in the telephone which was then in the early stages of development. He decided that he had found what he was looking for.

He came East and in 1889 began his telephone career with the New York & New Jersey Telephone Company in Brooklyn. In a short time he was elected Secretary and Treasurer of that company and in 1893 he was made General Manager of the New York Telephone Company.

The telephone had grown to a mechanical adequacy with which its organization had not kept pace and it was in the fields of organization that Mr. Bethell's genius found its outlet. He discovered that there was very little co-operation between the mass of telephone workers whose functions frequently overlapped and his first series of "General Instructions" aimed to remedy this defect. He planned definite work for those under him and inspired his subordinates with the all-important idea of team-work. Then when he had whipped his organization into shape he went out after business. There

U. N. Bethell

were less than 10,000 telephones in New York in 1893 and the rates were high. Mr. Bethell soon disabused the minds of both the public and his employees of the idea that the telephone was a luxury for the wealthy. He democratized the telephone in New York. Under his direction the number of pay-stations was doubled and the rates steadily cut. Small users were welcomed. There were more than twenty-one thousand telephones in the Greater City by 1897. There were 190,000 in 1905, and in 1908 there were 310,000. During 1906, sixty-five thousand telephones were put in.

In the meantime, Mr. Bethell's responsibilities were steadily growing. In 1901 he was made President of the Bell Company operating in Washington, Baltimore, and surrounding territory and later he became President of the company operating in Philadelphia and Eastern Pennsylvania. By successive steps he assumed the management of the Bell companies operating throughout New York State, New Jersey, Pennsylvania, Delaware, and Maryland.

In 1909, with Mr. Bethell at their head, these companies were formed into an operating unit covering a territory of about 125,000 square miles, from Washington on the South to Pittsburgh on the West, New York on the East, and the Canadian border on the North.

In 1910 Mr. Bethell was made Vice-President of the American Telephone & Telegraph Company and is now Senior Vice-President of that company as well as President of the New York Telephone Company which operates 1,033,490 telephones.

Mr. Bethell has made exhaustive studies of the telephone abroad and is generally acknowledged to be one of the world's authorities on all that pertains to questions of telephone policy and finance and details of telephone management. In 1909 Mr. Bethell received the Order of the Rising Sun from the Emperor of Japan for his services to science.

Mr. Bethell was married in 1893 to Miss Donna I. Brink and has three sons. He lives at Upper Montclair, N. J.

JOHN J. CARTY

One of the most important figures in the development of the art of telephony is John J. Carty, Chief Engineer of the American Telephone & Telegraph Company, known to-day throughout the world as the greatest of telephone engineers, and as the engineer of the longest telephone line in the world—the great Transcontinental.

Mr. Carty was born in Cambridge, Mass., April 14, 1861, and was endowed by nature with the essential elements for success in the telephone business—a clear, keen mind, a natural liking for mechanical experimentation, and an infinite capacity for work, to which was added a good education. He was graduated from the Cambridge Latin School with the intention of entering Harvard University, but a serious trouble with his eyesight forbade further immediate application to his books. A natural aptitude for mechanics and a leaning toward scientific investigation attracted him to the telephone business. In this business he has made an enviable name for himself during his thirty-six years' connection with it. When he began there were no textbooks to go by, and he had to join the band of pioneers blazing their way by tedious experimentation. There was no such thing as an electrical engineer, and much of what to-day represents the basis of telephone engineering is founded on what such men as he evolved from the hard school of experience.

His first employment was in 1879, with the old Telephone Dispatch Company of Boston, where he made a number of interesting contributions to the art of telephony—contributions that were of unusual value and that since have become permanent features of the art. Under his direction was installed at Boston the first multiple switchboard, which was at that time the largest ever put into use. For the "express" telephone system he designed and installed the first metallic circuit multiple switchboard to go into service. Some of the fundamental features of this board are at present in all of the boards of to-day.

In 1887 Mr. Carty took charge of the cable department of the Western Electric Company in the East, with headquarters at New York. In this capacity he studied cable manufacture and laying, and introduced a number of improvements, having charge of all of the important cable-laying projects which were carried on for some time in the Eastern cities. He then took charge of the switchboard department of the Western Electric Company for the East, and under his direction were installed most of the large switchboards of that period, among which was the original Cortlandt Street multiple board. During this time he made a number of important improvements in switchboards which have since become standard practice.

He was the first to demonstrate practically how to operate two or more telephone circuits connected directly with a "common battery," and about 1888 installed common battery systems in a number of central offices for the supply of operators' telephones. From these early experiments have grown the standard common battery systems now generally employed.

Although charged with serious practical engineering problems, Mr. Carty has found time to follow to some extent his strong natural inclination for original research. He made an exhaustive investigation into the nature of the disturb-

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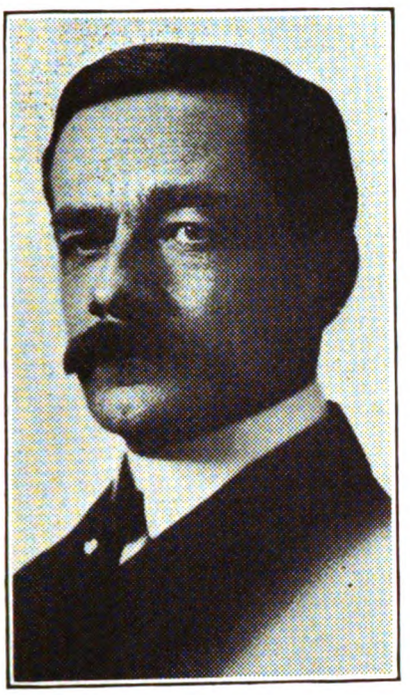

J. J. Carty

ances to which telephone lines are subjected, and gave the first public account of his work in a paper entitled "A New View of Telephone Induction," read before the Electric Club on November 21, 1889. The view put forth in the paper was revolutionary, but nevertheless, after being checked by numbers of experimenters in this country and Europe, received universal acceptance, and is the one now adopted in all works dealing with the subject. In this paper he showed the overwhelming preponderance of electrostatic induction as a factor of producing cross-talk, and proved that there is in a telephone line a particular point in the circuit at which, if a telephone is inserted, no cross-talk can be heard. The paper also gave directions for determining this silent or neutral point, and described original experiments showing how to distinguish between the electrostatic and electromagnetic induction in telephone lines.

On March 17, 1891, Mr. Carty made additional contributions to the knowledge of this subject in a paper before the American Institute of Electrical Engineers entitled "Inductive Disturbances in Telephone Circuits." This paper might better have been called "The Theory of Transpositions," because in it was made known for the first time precisely why it is that twisting and transposing telephone lines render them free from inductive disturbances.

In 1889 he entered the service of the Metropolitan Telephone & Telegraph Company, now the New York Telephone Company, for the purpose of organizing all of the technical departments, building up its staff, and reconstructing the entire plant of the company—converting it from grounded circuits overhead and series switchboards to metallic circuits placed underground, and to the then new bridging switchboards. In carrying out this work he selected and trained a large staff of young men fresh from college, many of whom have since attained positions of prominence in the telephone field. In the development of the personnel of his department, Mr. Carty has taken a particular pride, looking to the welfare of those already engaged, and, through his touch with prominent technical educators, adding each year to this staff from the graduating classes of our principal technical schools.

Under Mr. Carty also the reconstruction of the New York Telephone Company's plant was carried out the second time, converting it from cables and switchboards of the old type to modern cables and the common battery switchboard, and providing for the extraordinary extensions which to-day constitute the comprehensive telephone system of New York. In 1906 Mr. Carty delivered an important paper on "Telephone Engineering" before the American Institute of Electrical Engineers.

Mr. Carty was appointed Chief Engineer of the American Telephone & Telegraph Company in 1907, immediately after Mr. Vail became President of the Company. In that position he was responsible for the engineering work of the Bell System, and under his direction most important developments have been carried to a successful completion in all phases of both plant and traffic engineering. At the present time it is most pertinent to mention a few of the advances made by Mr. Carty toward the complete realization of universal service in the Bell System.

By far the longest underground telephone cable in the world has been designed, manufactured, laid, and placed in operation connecting Boston, Mass., with New York, and with Washington, D. C., and through this cable successful underground telephone communication over the 450 miles is daily realized.

The telephone lines and the apparatus used with them, connecting New York City with the West, have been improved and extended until, about the first of 1912, telephone conversation was possible over a distance of 2,100 miles, from Denver, Colo., to New York City. This in itself was a most notable achievement, the line from New York to Denver being then by far the longest telephone line in the world, and created wonder and admiration among telephone engineers not only in this country, but in Europe and elsewhere throughout the world. But the genius of Mr. Carty was not satisfied with this—nothing less than a telephone line that would talk the length and breadth of the United States would satisfy this Napoleon of the telephone engineering world. Immediately after the completion of the Denver circuits, engineering investigations and development work were started by Mr. Carty, the results of which were demonstrated on the 25th of January, 1915, when the formal celebration of the completion of the Transcontinental telephone circuits from San Francisco on the West to New York and Boston on the East, was held in the presence of most distinguished gatherings in these cities.

By invitation of the French Government he became a member of the International Telephone and Telegraph Conference at the Sorbonne, Paris, in 1910, where he delivered a notable address, "Telephone Service in America." He was also invited to become a member of the International Telephone and Tele-

Order of the Sacred Treasure *Order of the Rising Sun*

Decorations Conferred Upon J. J. Carty, Chief Engineer, American Telephone & Telegraph Co., by the Emperor of Japan

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graph Conference at Berne, in 1914, but this conference was postponed on account of the war.

Mr. Carty has been granted a number of patents, some of them fundamental in their character, of which perhaps the most important is that known as the Carty bridging bell patent. No more sudden and complete revolution in any part of the telephone art can be found than that which followed his address at the Detroit Telephone Convention in 1890 on the subject of bridging bells. From the day the address was delivered telephone engineers throughout the country began the work of removing series bells and replacing them with those of the bridging type. The improvement which this wrought in telephone service in party lines has not been exceeded by any other single advance in the art.

The Franklin Institute of Philadelphia, after an investigation by its committee on Science and Arts, in this matter of the bridging bells, awarded Mr. Carty the Edward Longstreth Medal of Merit for his engineering work. For his services in connection with the original establishment and subsequent development of the telephone system of Japan, Mr. Carty has twice received the formal thanks of the Japanese Imperial Government, and, by direction of the Minister of State, valuable specimens of Japanese art, consisting of rare cloisonné, were presented to him. He was decorated by the Emperor of Japan in 1909, with the Imperial Order of the Rising Sun, and again in 1912, he received the Imperial Order of the Sacred Treasure of the Meiji.

Mr. Carty is a Fellow of the American Institute of Electrical Engineers, and was formerly one of its Vice-Presidents. He is a past President of the New York Electrical Society, a member of the Franklin Institute of Philadelphia, and of the American Society for the Advancement of Science, an honorary member of the Telephone Society of New York, and an honorary member of the Telephone Employees' Association of New England. He is also a member of the Society of Arts, and an honorary member of the American Electro-Therapeutic Society, to which position he was elected in recognition of his valuable work in the direction of more rational methods in the use of electrical currents in medicine. Mr. Carty is a member of the Engineers' Club of New York, the New York Electrical Society, and the Telephone Pioneers of America.

BANCROFT GHERARDI

Bancroft Gherardi, Engineer of Plant of the American Telephone & Telegraph Company, was born in San Francisco, California, April 6, 1873. He was graduated from the Polytechnic Institute of Brooklyn in 1891 with the degree of B.S., after which he went to Cornell, where he received the degree of M.E. in 1893 and M.M.E. in 1894.

In February, 1895, he began his telephone engineering work in the office of Mr. J. J. Carty, then Engineer of the Metropolitan Telephone and Telegraph Company, the predecessor of the New York Telephone Company. His earliest work was the inspection and testing of cables, so at the very start he became familiar with the state of the art in regard to this important part of the telephone plant. After doing this and other general work for some time, he was placed by Mr. Carty in charge of the material inspection work of the company. Later, when it became necessary to prepare a new fundamental plan for New York, this work was placed under his charge, and he directed the preparation of a fundamental plan for 100,000 lines within the area of Manhattan and The Bronx. This figure of 100,000 lines then seemed so large that some doubted whether the plan was one resting on any but a fantastic foundation. This was in 1898. However, in 1907, only nine years later, these 100,000 lines were attained, and before that time much larger plans were prepared and are now outgrown.

In the fall of 1900 Mr. Gherardi was transferred to the Traffic Department of the New York Telephone Company. He there reported to Mr. E. F. Sherwood, Superintendent of Traffic, and under his direction and that of Mr. Carty, created the first Traffic Engineering Department of any operating company; a department now recognized as such an important part of the administration of a successful telephone company.

On January 1, 1901, Mr. Gherardi was appointed Chief Engineer of the New York & New Jersey Telephone Company, then operating as a separate company, although intimately associated with the New York Telephone Company because of its proximity, similarity of conditions, and large interchange of business. His close connection, both professional and personal, with Mr. Carty, the Chief Engineer of the New York Telephone Company, and with the other officials of that company, enabled him to bring the engineering of the New York & New Jersey Telephone Company into

Bancroft Gherardi

the closest and most harmonious relations with that of the New York Company.

The first important work which confronted him was the preparation of fundamental plans for Brooklyn and other large cities in the company's territory, and immediately following these, and based thereon, was the conversion of the plant to a common battery basis. Soon after his appointment to the New York & New Jersey Company, loading was invented, and it was decided to place a loaded cable between New York and Newark. This cable was the first commercial application of cable-loading to a working telephone plant, and in connection therewith many questions came up requiring solution. This cable was successful and was immediately followed by a very rapid extension of loading throughout the territory.

In March, 1906, the operating organizations of the New York Company and the New York & New Jersey Company were consolidated, and at that time Mr. Gherardi became Assistant Chief Engineer of both companies, reporting once more to his old chief, Mr. Carty.

In May, 1907, when Mr. Vail became President of the American Telephone & Telegraph Company, he appointed Mr. Carty to the position of Chief Engineer of that company, and in connection with the reorganization of the engineering forces, Mr. Gherardi was appointed Equipment Engineer of the American Telephone & Telegraph Company, and in 1909 was appointed Plant Engineer of that company, in charge of all plant development and standardizing for the Bell System.

He has had his part in connection with the subway and cable from Boston to Washington, the lines from New York to Denver, and later the transcontinental line, to say nothing of a multitude of problems in regard to switchboards, subways, cables, open wire lines, substation instruments, transmitters, receivers, cross-talk, inductive interference, and every other question pertaining to the largest telephone plant in the world.

Mr. Gherardi was particularly fortunate in working at the start and throughout his whole career under the direction of and in close association with Mr. Carty, who is universally recognized as the leading telephone engineer of the world. No one knows better than Mr. Gherardi that it is both a scientific and liberal education to work for Mr. Carty.

For many years he has been connected with the American Institute of Electrical Engineers, and has taken a prominent part in its affairs. In addition to presenting a number of papers and taking part in discussions, he held the position of Manager of the Institute for three years and for two years was one of its Vice-Presidents. Last year he was again elected to the Board of Directors as a Manager, a position which he now holds. In the Telephone Society of New York

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Gold Medal Presented to Lieut. Gherardi, Father of Bancroft Gherardi of the A. T. & T. Co., in Commemoration of Services Rendered in the Laying of the First Trans-Atlantic Cable

he has occupied many positions, including that of President, and has presented a number of papers.

In June, 1898, Mr. Gherardi married Miss Mary Hornblower Butler. Mr. and Mrs. Gherardi reside at Bayhead, N. J., but spend their winters in New York City.

The name Gherardi appears in the histories of two most important steps in the development of electrical communication. Some fifty years before Bancroft Gherardi, Plant Engineer of the American Telephone & Telegraph Company, had an active part in the completion of the first transcontinental telephone line, his father was prominent in the laying of the first Atlantic cable.

The first attempt to lay a cable under the Atlantic was in 1857. The wire which was played out from the stern of the laying ship broke and 500 miles of it were lost. In July of the following year a second expedition was sent out. On July 28, in mid-ocean, the naval ships *Niagara* and *Agamemnon*, each carrying half the cable wire, spliced the ends and started off in opposite directions. Lieut. Gherardi, Engineer Gherardi's father, who was later to become Rear-Admiral, was senior watch-officer aboard the *Niagara*. The *Niagara* headed west for the spot chosen as the terminus at Trinity Bay, Newfoundland. She arrived there on August 5th and Lieut. Gherardi was sent off in charge of the small boat that landed the cable. For his share in this historic achievement Lieut. Gherardi was awarded the medal shown in the cut. That medal is one of the most treasured possessions of the head of the Plant Engineering of the Bell System. It is a notable coincidence that the younger Gherardi is now doing his part in connection with another epoch-making event—the spanning of the continent with a telephone line by far the longest in the world, and connecting San Francisco, his birthplace, on the Pacific Coast, with New York, his present home, on the Atlantic Seaboard.

DR. MICHAEL IDVORSKY PUPIN

It is timely that in this issue of THE TELEPHONE REVIEW we should print a portrait of Michael Idvorsky Pupin, the distinguished professor of Columbia University.

Dr. Pupin is so well and favorably known to us that we like to regard him as a member of the great Bell family. To print an account of his titles and distinctions would require columns, but this brief list will suffice for our readers who are so well acquainted with his delightful personality and so conscious of his eminent standing among the shining lights of the art of telephony.

He was graduated from Columbia University in 1883 with the degree of Bachelor of Arts. He received the degree Doctor of Philosophy from the University of Berlin in 1889, and the degree of Doctor of Science from Columbia University in 1904.

He is a fellow of the American Association for the Advancement of Science, the New York Academy of Sciences, a member of the National Academy of Sciences, American Philosophical Society, American Physical Society, American Mathematical Society, American Institute of Electrical Engineers, and is a well-known contributor to many scientific and technical journals.

Throughout the entire length of the transcontinental line through which the talking between the Atlantic and the Pacific was first done, there are at intervals of about eight miles, hundreds of Pupin loading coils spaced according to the rule which was the outcome of his extraordinary genius and marvelous knowledge of physical laws.

Dr. Pupin's invention, which was purchased by the Bell Company for a large sum of money, has been described so often and is so technical in its nature that no attempt will be made here to describe its remarkable electrical and physical characteristics.

While all the world already knows of the great importance of Dr. Pupin's invention, it is with peculiar pleasure that we are now printing his portrait and these few words as a slight tribute to his genius and as a remembrance of his great and enduring contribution to the art of transmission just now so brilliantly exemplified.

Dr. Pupin is Honorary Representative of the Servian Government in the United States and his patriotic labors on behalf of his struggling countrymen are so continuous and self-sacrificing that he was not able to be present with us at the formal opening.

Dr. Michael Idvorsky Pupin

A Dream that Came True

Some dreams do come true. Alexander Graham Bell was called an "impostor," a "ventriloquist," and "a crank who says he can talk through a wire," when he invented the telephone which English newspapers called "the latest American humbug." And yet Bell was one of the advance guard of civilization and progress, for with the prophetic vision of a dreamer he wrote in 1878: "It is possible to connect every man's house, office or factory with a central station, so as to give him direct communication with his neighbors. . . . It is conceivable that cables of telephone wires could be laid underground, or suspended overhead, connecting by branch wires with private dwellings, shops, etc., and uniting them through the main cable with a central office."

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C. E. SCRIBNER

Charles Ezra Scribner, Chief Engineer of the Western Electric Company, the manufacturing organization of the Bell System, is the third man in the electrical field in the United States in the number of electrical patents issued. Mr. Scribner has taken out between 400 and 500 United States patents and has between 600 and 700 applications on file. His principal inventions have been telephone apparatus, although when he first turned his attention to things electrical he patented numerous electrical devices such as dynamos and arc lights.

He has made many important contributions to the art of telephony, particularly in the development of switchboard, the "nerve center" of the telephone system. All other telephone apparatus also shows the imprint of his work.

Mr. Scribner was born at Mt. Vernon, Ohio, February 16, 1858, the son of Charles Harvey and Mary Elizabeth (Morehouse) Scribner. He was educated in the schools of Toledo, Ohio. He was only 18 when he went to the Chicago factory of the Western Electric Manufacturing Company to show a model of a telegraph repeater he had made. There he met Enos M. Barton, the head of the organization, and through the latter's influence became an inspector of printing telegraph apparatus in a local telegraph company. Shortly afterward he entered the laboratory of the Western Electric Manufacturing Company and from that moment he began a career as an investigator and inventor that has brought him international fame, and Mr. Scribner, still a young man, has seen the results of his research and development work bear splendid fruit in the present telephone system of the country.

C. E. Scribner

The Western Electric Manufacturing Company dropped the word "Manufacturing" from its name in 1882. Mr. Scribner remained at the Chicago factory until 1908, when he became connected with the New York office as Chief Engineer in charge of development and experimental work.

Mr. Scribner is a Fellow of the American Institute of Electrical Engineers and in 1913 was a director and vice-president of the organization. He is a trustee of the United Engineering Society. His work in the electrical field was recognized at the Paris Exposition of 1900 by the award of a gold medal.

Mr. Scribner's clubs include the Machinery Club and the Engineers' Club of New York; the Ethan Allen Club and the Waubanakee Golf Club, both of Burlington, Vermont.

On December 1, 1880, he married Miss Marietta Margaret Brown of Toledo, Ohio. His home is at 258 Riverside Drive, New York.

FRANK B. JEWETT

Dr. Frank B. Jewett, Assistant Chief Engineer of the Western Electric Company, has had a large share in solving the problems of transmission that have been created as telephony has been developed to the extent where transcontinental telephone talk could be made possible. For nearly eight years he was in the Engineering Department of the American Telephone & Telegraph Company, and in that period had charge of all transmission development work for the Bell System.

While Dr. Jewett was Transmission Engineer for the American Telephone & Telegraph Company the loading of eight-gauge circuits was perfected; phantom cables and phantom loading for open wires and cables were developed; the New York to Denver circuit and line was engineered and also the Boston to Washington underground cable. Dr. Jewett began work on the transcontinental line, retaining general charge of the transmission engineering until the line was completed.

Frank B. Jewett was born in Pasadena, California, September 5, 1879. He graduated from Throop Polytechnical Institute of Pasadena in 1898 with the degree of A.B. in electrical engineering. From 1898 until June, 1902, he was a student in the University of Chicago, receiving the degree of Ph.D. in 1902. From 1901 until June, 1902, he was research assistant to Professor Michelson of the Department of the Physics. From 1902 to 1904 Dr. Jewett was instructor in physics and electrical engineering at the Massachusetts Institute of Technology.

Frank B. Jewett

Dr. Jewett became connected with the American Telephone & Telegraph Company in September, 1904, remaining until April, 1912, when he became Assistant Chief Engineer of the Western Electric Company, having charge of all development and research work.

Dr. Jewett is a Fellow of the American Institute of Electrical Engineers and is Chairman of the Telephone and Telegraph Section of the Standards Committee of the Institute. He also is a member of the Society for the Advancement of Engineering Education and President of The Telephone Society of New York. His clubs include the Machinery, Engineers and Technology Clubs of New York and the University Club of Chicago. He is a member of Delta Upsilon fraternity.

Dr. Jewett has written numerous papers on various scientific subjects for the *Philosophic Magazine* and the *Physical Review*, and he has presented papers before the American Institute of Electrical Engineers.

In 1911 he presented a paper on "Long Distance Telephony in America" before the International Electrical Congress at Turin, Italy.

On December 28, 1905, he married Miss Fannie C. Frisbie of Rockland, Ill.

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Mr. Theodore N. Vail
on behalf of the
American Telephone and Telegraph Company
and its Associated Companies
requests the honor of the presence of
Dr. Alexander Graham Bell
at the celebration of the completion
of the Transcontinental Telephone Line
at four o'clock on Monday afternoon
the twenty fifth of January
One thousand nine hundred and fifteen
The Telephone Building
15 Dey Street, New York

Fac-Simile of the Invitation Issued to Inventor of the Telephone to be Present at the Celebration

SOME INTERESTING FACTS

The New York-San Francisco line is 3,390 miles long.

There are two circuits, each using 6,780 miles of hard-drawn copper wire.

There are 870 pounds of copper wire in each circuit mile, and 2,960 tons in the entire line.

By transposing the two physical circuits, there is created an additional circuit known as a "phantom circuit."

If a voice were loud enough to be heard from New York to San Francisco, it would take four hours to travel that distance through the air.

The voice by telephone travels from New York to San Francisco in 1-15th of a second, travelling at the rate of 56,000 miles per second.

The voice of a man speaking in New York is heard in San Francisco three hours earlier, that being the difference in the standard time of the two cities.

The first sound was transmitted by telephone June 2, 1875, in Boston.

The first words were transmitted by telephone March 10, 1876, in Boston, Mr. Watson heard Prof. Bell say, "Mr. Watson, please come here, I want you."

The first conversation held by telephone took place October 9, 1876, over a telegraph line two miles long between Boston and Cambridge. Mr. Bell and Mr. Watson talked.

The first newspaper report ever transmitted by telephone was sent from Salem, Mass., to the Boston *Globe*.

The New York-San Francisco line crosses thirteen states.

The energy freed by cooling one spoonful of water one degree, would operate a telephone for ten thousand years. This baby current of electricity must take a voice 3,400 miles, and it cannot be increased, or its power to transmit speech is gone.

One hundred thirty thousand poles are required to carry the line across the continent.

Four hard-drawn copper wires, .165 inch in diameter, carry the current from ocean to ocean.

In the loading coils for each physical circuit there are 13,600 miles of fine insulated wire 4-1,000 of an inch in diameter.

The Panama Canal was begun nine years ago and has cost $310,000,000; within the same space of time the Bell Company has spent twice that amount in its engineering construction work alone.

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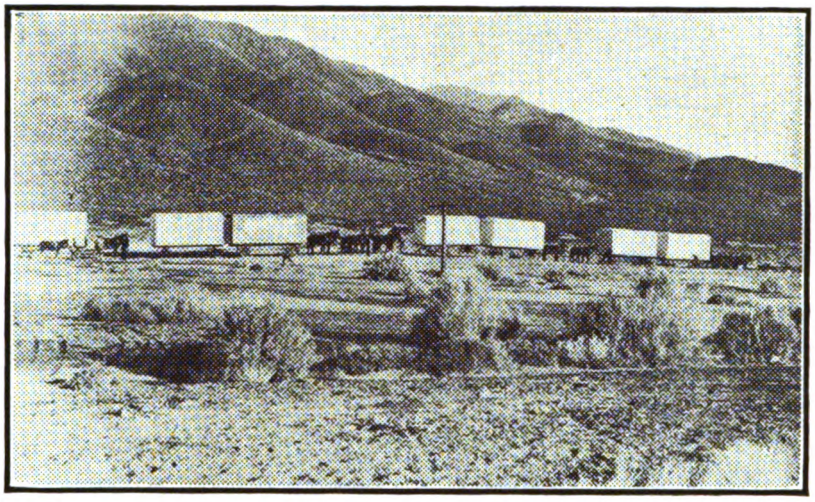
"Hello, 'Frisco!"

Across the Continent in Story and Picture

Father Knickerbocker Salutes Miss California by Telephone



Blazing the Trail for the Transcontinental Telephone Line

Less than forty years ago, Alexander Graham Bell, standing in a little attic at No. 5 Exeter Place, Boston, sent through a crude telephone, his own invention, the first spoken words ever carried over a wire, and the words were heard and understood by his associate, Thomas A. Watson, who was at the receiver in an adjacent room. On that day, March 10th, 1876, the telephone was born, and the first message went over the only telephone line in the world—a line less than a hundred feet long. The world moves a long way ahead in the span of one man's life. On Monday afternoon, January 25th, this same Alexander Graham Bell, sitting in the offices of the American Telephone & Telegraph Company, at New York, talked to this same Thomas A. Watson in San Francisco, over a wire stretching 3,400 miles across the continent and part of a system that includes 9,000,000 telephones, connected by 21,000,000 miles of wires.

In that same memorable year of 1876, Dom Pedro de Alcantara, Emperor of Brazil, visiting the first telephone exhibition at our first great national show, the Philadelphia Centennial, picked up the receiver, listened as Professor Bell talked at the other end of the room, and, amazed at the wonder of the thing, cried out: "My God—it speaks." Had Dom Pedro lived to see the Panama-Pacific Exposition he could have heard Professor Bell talking to him, not merely from the other end of a room, but from the other side of a continent.

The Panama-Pacific Exposition itself, planned to celebrate the completion of the Panama Canal and the joining of the Atlantic and Pacific oceans, will mark a still closer welding of the East and West. When its gates are thrown open on February 20th, San Francisco will not only be nearer to New York through a shortening of its water ways, but will be in constant and instantaneous touch with it through the medium of speech. It is a curious fact, too, that this second great feat of engineering, this other canal, this even more intimate connection between the two seaboards, has been completed in the same year. Quietly, almost unnoticed, but steadily and bravely, while the gigantic steam shovels were cutting their way through the earth in the South, the engineers of sound and electricity were weaving their magic webs through the air and pushing on toward the Golden Gate. Their work has been less spectacular, it has excited little attention, but these men have met obstacles as hard to overcome as the Culebra slide, and they have conquered them. The long-dreamed-of Transcontinental Line is no longer a dream. New York can talk to San Francisco.

The Transcontinental Line Open

Monday, January 25, 1915, has taken its place among the momentous dates in the annals of science and human progress. On that day, in the presence of groups of prominent men on either coast, the Transcontinental telephone wires were given their first public test, and the completion of the line was formally celebrated. Distinguished men in the offices of the Pacific Telephone & Telegraph Company in San Francisco conversed freely with distinguished men on the Atlantic seaboard, and one more great chapter in the history of telephony was finished as Bell, sitting in the offices of the American Telephone & Telegraph Company in New York, talked to Watson across a continent.

There was no hitch in the programme, or any doubt as to the immediate success and practicability of the new line. Those who talked over the telephone did not raise their voices above the usual conversational pitch, and the replies came back from across the continent, clearly and instantaneously. There was no more effort, delay, or indistinctness than in talking across a table. Professor Bell says that he thought out the telephone in Salem. A fitting place for its conception—there is witchcraft in it, and the most blasé of business men in the offices of the American Telephone & Telegraph Company on Monday felt something akin to uncanniness at the thought that his voice had gone across thirteen states, shot over prairies and through forests, hurtled through cities, climbed the Rockies, skimmed across the desert and reached the Pacific coast, and the answer had come back to him in an eye-wink.

A Dramatic Moment

There have been few more dramatic moments in the history of science than when the venerable Professor Bell lifted the receiver from its hook and called to Watson, the friend and fellow-workman of his youth, in far away San Francisco. There was a wonderful story in that first "Hello," a marvelous tale of miracle-working, of heroic struggle and sublime achievement. Few men have seen so great a dream come true, probably no two men before, in all the history of the world's discoveries and inventions, ever lived to see such magnificent results from work in which they had been the pioneers. Hardened telephone users as all of those present were, and accustomed to big events as most of them were, a hush that was tinged with awe, an almost solemn silence, fell on the assemblage as the great inventor talked to his associate. Every one felt that he was taking part in an epoch-making event, that, in the future, school children would be made to learn January twenty-fifth as one of the big dates in the world's scientific, commercial, and political history, one that ranked with that other day when "What wonders hath God wrought" was flashed over Morse's wire.

In the Space of a Lifetime

Most wonderful of all, perhaps, in the minds of those present at the opening of the new line was the fact that this achievement, the crowning glory of so vast and complex a system, had taken place within the space of a man's lifetime. On March 10th, 1876, Professor Bell, working away at the simple telephone he had invented, called to his comrade, "Mr. Watson, come here, I want you," and Watson heard that first of all telephone messages over the wire. In New York on January 25th, 1915, the same voice was talking and, in San Francisco, the same ear was listening, as on that spring day thirty-eight years ago, but under what different conditions! Then the struggling young inventor and his associate had just succeeded in producing the only telephone in the world and in talking over a few feet of wire. Ahead of them were years of ridicule for their invention, indifference to their plans, and opposition to their efforts. On this other great day they saw their simple

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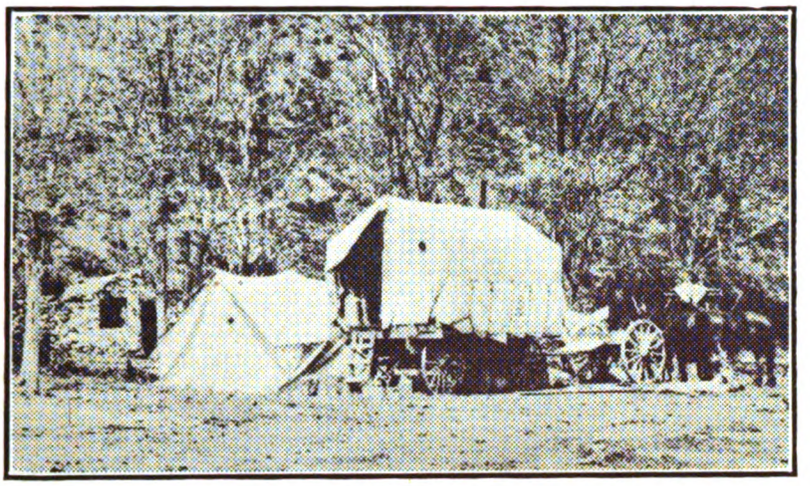


Making Camp. The Stone House on the Left Was Used as a Stage House Before the Days of the Railroad

contrivance as part of a vast system joining together the country's greatest and most distant cities and serving the uses of 100,000,000 people. Not many men have seen so great a fulfilment of their early ambitions, no other invention has ever taken so great a stride in so brief a time.

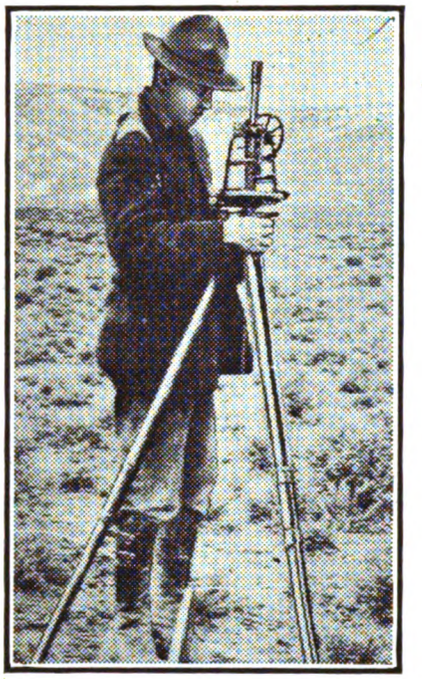
It *has been* a tremendous stride, for when Bell invented that first feeble receiver, it was the beginning of telephones. There had been nothing like it or anywhere near like it in all the ages. It was a creation—as far as scientific apparatus was concerned, it was made out of nothing. More than that, this crude instrument—just capable of transmitting speech the length of a room—was all Bell gave to the art of telephony, but it was enough. The American Telephone & Telegraph Company and its associated companies have done the rest.

The Real Problem

Just what this "rest" means can be fully appreciated by those only who know the difficulties to be overcome by the telephonic engineer and the subtlety and delicacy of the forces with which he has to deal. The very minuteness of things makes his task herculean. Instead of having to figure on immense weights and masses, he is baffled by infinitesimally small fractions. His energies are devoted to conservation, and conservation of the most intense kind.

It was, perhaps, little more difficult to string wires from Denver to San Francisco than from New York to Denver, but the actual construction of the line was the least of the engineer's troubles. His real problem was to make the line "talk," to send something 3,000 miles with a breath as the motive power. In effect, the voyage of the voice across the continent is instantaneous; if its speed could be accurately measured, a fifteenth of a second would probably be nearly exact. In other words, a message flying across the continent on the new Transcontinental Line, travels, not at the rate of 1,160 feet per second, which is the old stage-coach speed of sound, but at 56,000 miles per second. If it were possible for sound to carry that far, a "Hello" uttered in New York and traveling through the air without the aid of wires and electricity, would not reach San Francisco until four hours later. The telephone not only transmits speech, but transmits it thousands of times faster than its own natural speed.

But, while the telephone is breaking speed records, it must also guarantee safe delivery to these millions of little passengers it carries every few minutes in the way of sound waves created at the rate of 2,100 a second. There must be no jostling or crowding. These tiny waves, thousands and thousands of varying shapes, which are made by the human voice, and each as irregular and as different from the other as the waves of the sea, must not tumble over each other or get into each other's way, but must break upon the Pacific coast just as they started at the Atlantic, or all the line fails and the millions of dollars spent upon it have been thrown away. And in all this line, if just one pin-point of construction is not as it should be, if there is one iota of imperfection, the miles of line are useless, and the currents and waves and sounds and words do not reach the end as they should. It is such tremendous trifles, not the climbing of mountains and the bridging of chasms, that make the Transcontinental Line one of the wonders of the ages.



The Surveyor Sets Up His Transit to Start the Work

More of the Surveyor's Job—Measuring the Span

The engineer in telephony cannot increase his motive power. A breath against a metal disk changes air waves into electrical currents and these electrical currents, millions of which are required for a single conversation, must be carried across the continent and produce the same sound waves in San Francisco as were made in New York. Here is a task so fine as to be gigantic. In his "History of the Telephone," Herbert N. Casson says that the energy set free by cooling one spoonful of water just one degree, would operate a telephone for ten thousand years. It was to nurse and coax this

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The Next Step—Driving the Stake

baby current of electricity three thousand miles across the continent, under rivers and over mountains, through the blistering heat of the alkali plains and the cold of snow-capped peaks, that has taken the time and thought and labor of the brightest minds of the scientific world.

Solving the Problem

Never has been such a skillful and patient lot of trained nurses, though, as this invalid of a current has had. Beginning with that first timid step in Boston, thirty-eight years ago, they have led the weakling on, mile after mile, to city after city, till it has reached the other coast.

Who did it? Who made this wonderful achievement possible? Ten thousand men, beginning with Bell and Watson tinkering away at that first crude telephone in an attic, forty years ago. It has taken an army of thoughtful, conscientious, patient men, keen of brain and skilled of hand, striving day and night for the one great end—the perfection of a system and the conquering of time and space. In office, laboratory and shop, under the earth, high up in the air, they have thought and experimented and toiled, always aiming toward this idea of universal service.

There has been no isolated problem, literally as well as figuratively the development and perfection of the system has been "all along the line." The fight, this new "Winning of the West," has not been a duel, to be won by a single inventor struggling for the solution of some one big problem, but a battle, a campaign, in which thousands have helped to overcome a thousand hindrances and imperfections and difficulties.

When the telephone left the hands of Bell and Watson, it was "an essentially perfected instrument" in the eyes of the law, that is, it did what was claimed for it—it talked—but that was all. The diaphragm was simply an animal membrane tied around a piece of wood and in touch with a magnet. From this acorn the oak of the Bell System, nation wide, has grown. From this small beginning, the Transcontinental Line has been evolved, and it *has been* an evolution. In the words of President Theo. N. Vail, it is "the cumulative effect of improvements, great and small, in telephone, transmitter, line, cable, switchboard, and every other piece of apparatus or plant required in the transmission of speech." In all the 3,400 miles of the line there is no one spot where a man may point his finger and say, "Here is the secret of the Transcontinental Line; here is what makes it possible to telephone from New York to San Francisco." Rather, it is the perfection at every point that has brought this about. It is the development of the transmitter at New York that makes the receiver at San Francisco do its work so well; it is the improvements in the receiver at San Francisco that causes the transmitter at New York to perform its functions so admirably; it is the perfecting of every inch of line and every bit of mechanism between them that enables the instrument at New York to talk and that at San Francisco to hear.

The Magnitude of the Task

In spite, however, of the fact that, compared with the electrical problems, the mere engineering task of constructing the line may appear simple to the scientist, no one can run his finger over the route of the new line on the map without being impressed with the magnitude of the undertaking. The data and figures are tremendous. The line crosses thirteen states, it is carried on 130,000 poles. Four hard-drawn copper wires, .165 inch in diameter, run side by side over the entire distance, establishing two physical circuits and one phantom circuit. One mile of a single wire weighs 435 pounds, the weight of the wires in the entire line being 5,920,000 pounds or 2,960 tons. This, of course, is the transmission wires alone. In addition to these, each physical circuit uses some 13,600 miles of fine hair-like insulated wire, 4-1,000 of an inch in diameter, for its loading coils.

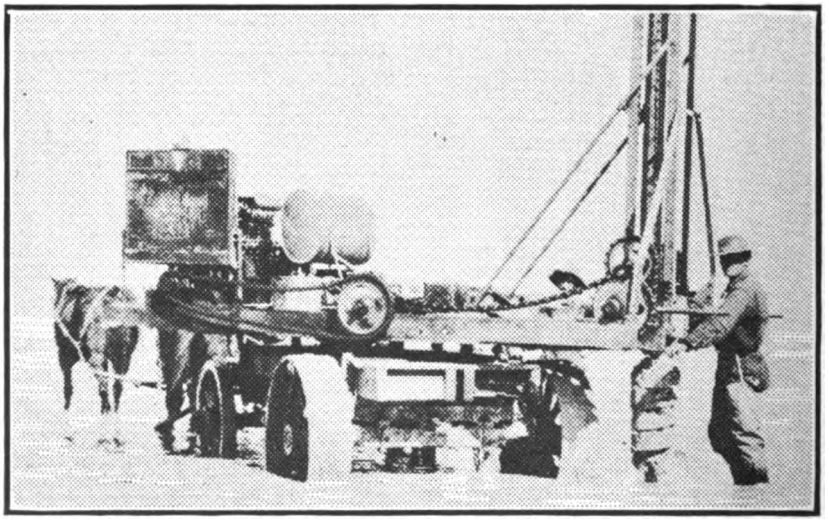
Simply to string this immense amount of wire across the continent, to set the poles and insure insulation, to conquer the innumerable difficulties offered by land and water, forests, mountains, deserts, rivers and lakes, was in itself a task of no mean magnitude. The Panama Canal is hailed as one of the greatest achievements of the world's workers, as it is, but the almost invisible lines of the Bell System, considered simply as to labor and cost, constitute a monumental achievement.

The Canal was begun nine years ago and has cost $310,000,000; within the same space of time the Bell Company has spent twice that amount in its engineering construction work alone.

Two Leaders in the Work

The building of the Transcontinental Line depended on the solution of no one isolated problem, nor will the glory of it be given to any one isolated individual, but there are a few names that will always stand out above the rest in connection with it. There must be great generals for armies that win such victories.

For many years this line from ocean to ocean has been the dream of Theodore N. Vail, president of the American Telephone & Telegraph Company, the goal toward which he has pushed and toward which he has steadily led his associates and the army of his employees. Not the dream of a dreamer, but the prophetic vision of a practical, forceful, capable man, a man of unlimited business energy and knowledge, who could see anything in telephony except impossibilities. He not only cannot see them, but will not admit that they exist; he does not find



Boring Pole Holes Across Lake Humboldt, Nev.

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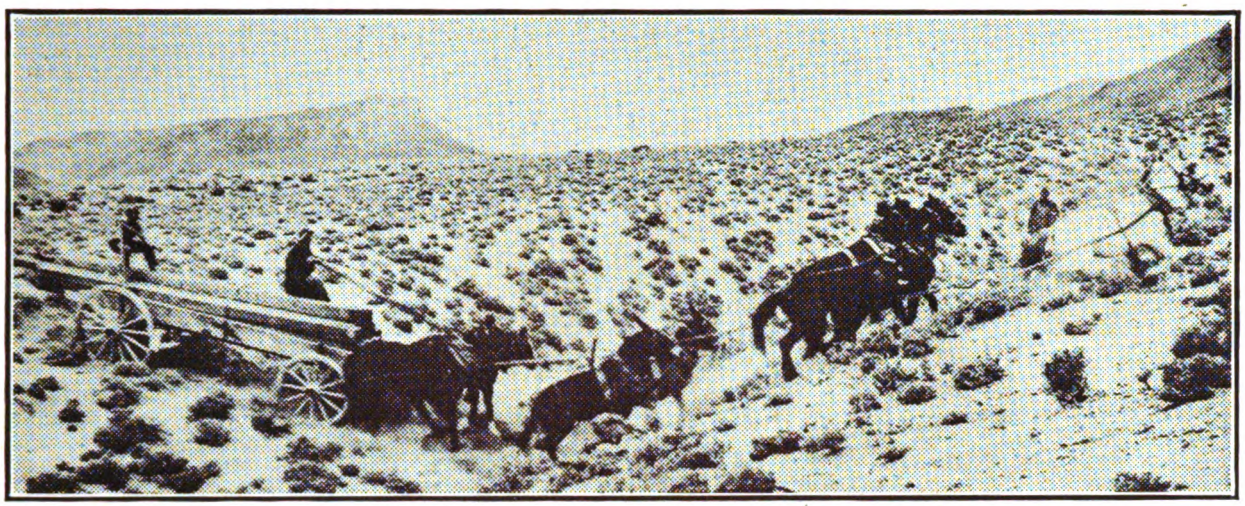


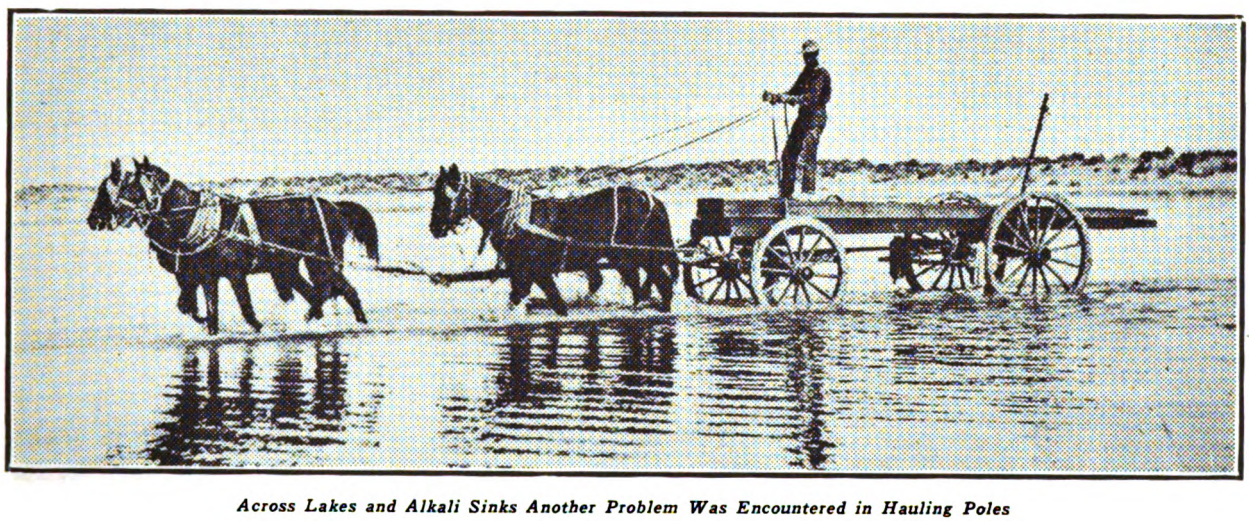
Over Mountainous Countries Paths Had To Be Made by Teams Distributing Poles

the word "impossible" in his dictionary of engineering terms. Almost from the beginning of the telephone, his energy and enthusiasm, his dauntless optimism and ambition in everything relating to its perfection and promotion, and his idea of "universal service," have dominated the company and made enthusiasts of every one connected with it in great things or in little.

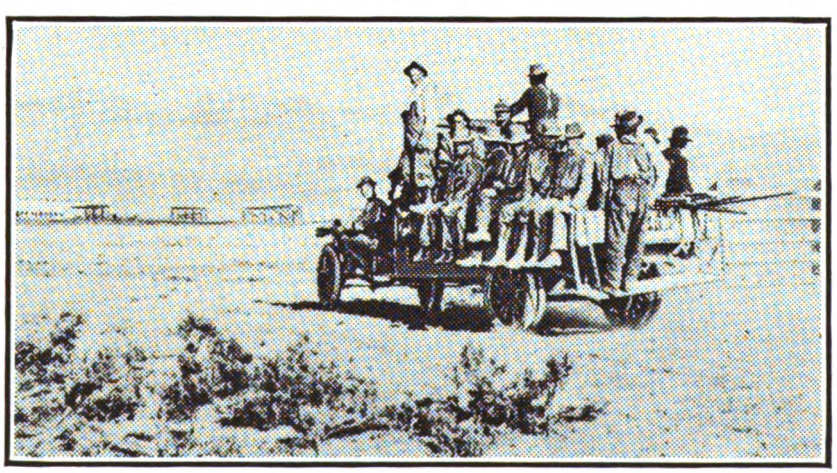
At his side through most of these years has been a slightly built, lithe, keen-eyed man, who never has to be told but once when a great thing is to be done. A nod, and a line goes to Denver; a word, and it stretches to the Pacific coast. That is John J. Carty, Chief Engineer of the American Telephone & Telegraph Company. A leader among the scientific men of all nations and honored by their rulers for his distinguished services in engineering accomplishment, his wide knowledge, his keen judgment, and his indomitable energy have combined to make him one of the great factors in telephone achievement and advancement. He is the wizard of the wires. Long ago he said this great thing could and should be done, and through the great banks of silence that separated the East from the West, this Goethals of electricity has been cutting his way, year by year, until the great canal of human speech is done.

Others have played big parts in this drama of human endeavor and achievement, and thousands have given their share of thought and labor, but, whoever is forgotten or remembered, the names of Vail and Carty will be linked with this new triumph of science as long as man talks to man.

There has been no greater achievement in the history of the Bell Company, none in the history of telephony, few in the history of the world. The gain to science is great. Immeasurably more precious, however, is that to the nation, and incalculably greater are the benefits to commerce and society. What the Transcontinental line means to the future of the country, what it will bring about by drawing the East and West closer together, how much of increased prosperity and happiness these thousands of miles of wire will insure, no man can gauge.



Across Lakes and Alkali Sinks Another Problem Was Encountered in Hauling Poles



Pole-Setting Crew Starting for Work. In This Section of Nevada Horses Were Soon Exhausted by the Salty Air

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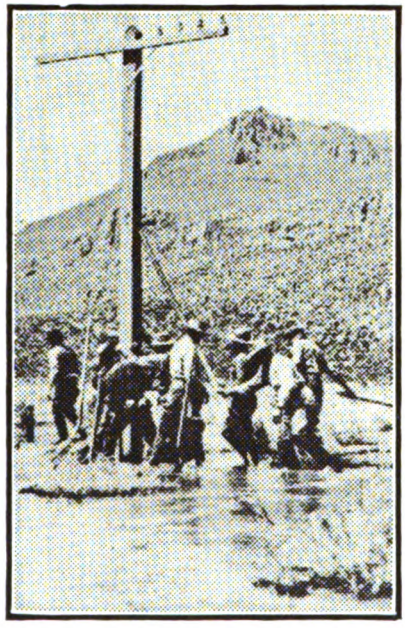
What It Means to the Country

One of the most prominent of the guests who talked over the longest of long-distance telephones at the celebration, said:

"I thought I had gotten over wondering at the miracle of the telephone, but what I have just done amazes me as much as the first words I heard over the wires many years ago. Even now I can hardly conceive that it is possible. I have talked over long distances many a time before, but this is far beyond the limit. Chicago I am used to, even Denver; but this talking from the Atlantic to the Pacific gives one a thrill. It appeals to the imagination—it is a theme for poets.

"What it means to the country, it is impossible to estimate. For one thing, it is a final blow to sectionalism—it has put a seal on the fact that there is no longer East and West, North and South. Not even the railroads or the new canal have done or can do so much toward bringing the States closer together and uniting them more firmly, not only in commerce, but in thought and language. Provincialism will become rarer and rarer, localisms, dialects—all such things that depend on isolation—are getting to be an impossibility in the United States, and the telephone has been the greatest agent in bringing about this desirable condition. It is hard for people to get very far apart when they are in such constant touch with one another, and I know of nothing which is doing more to strengthen the bonds between individuals and communities than the network of wires the American Telephone & Telegraph Company is spreading over the country. So much importance do I attach to this idea, that, extreme as the statement may seem, I believe quite firmly that, had the telephone system reached its present perfection previous to 1861, the Civil War would not have occurred. The wires would not have let the North and South drift so far apart."



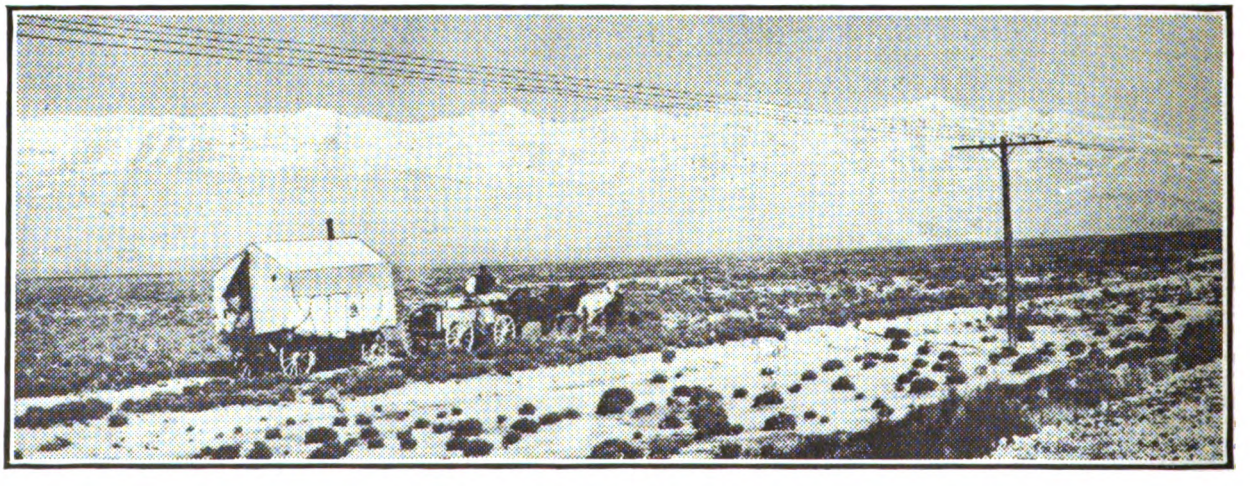
Pole-Setting Crew at Work in a Swamp

The Next Step Is to String the Wires

Universal Service

The new Transcontinental Line is a concrete exemplification of the possibilities of universal service and a justification of the arguments for a single system. Under no other plan would such a line be possible. This line, 3,400 miles long, and joining the Atlantic and Pacific, is part of the great Bell System of 21,000,000 miles of wire, connecting 9,000,000 telephone stations located everywhere throughout the United States. Comprising this system are the American Telephone & Telegraph Company and its associated and connecting companies, thousands of them, giving instant and perfect communication among 100,000,000 people.

The opening of this line is the culmination of the Bell idea of universal service—in presenting it for the use and convenience of the public, the American Telephone & Telegraph Company renders an account of its stewardship. It has fulfilled its promise and, not only in itself, but as an earnest of what is to follow in future development, this nation-wide line proves that it is the intention of the American Telephone & Telegraph Company to make it possible for every man who can talk, to talk over the telephone to every man who can hear.



Moving Westward Again to the Next Stop

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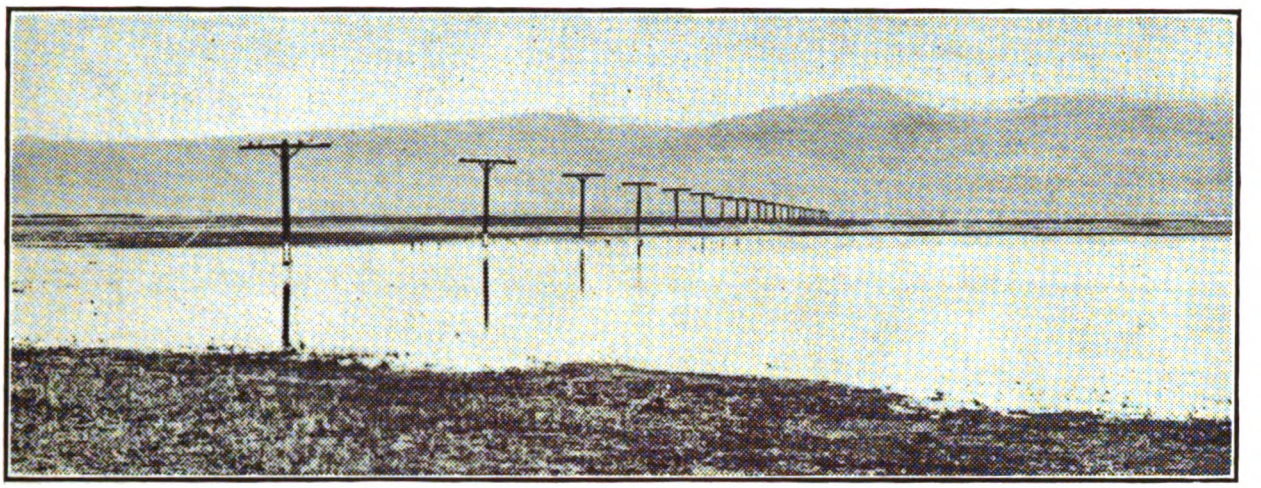
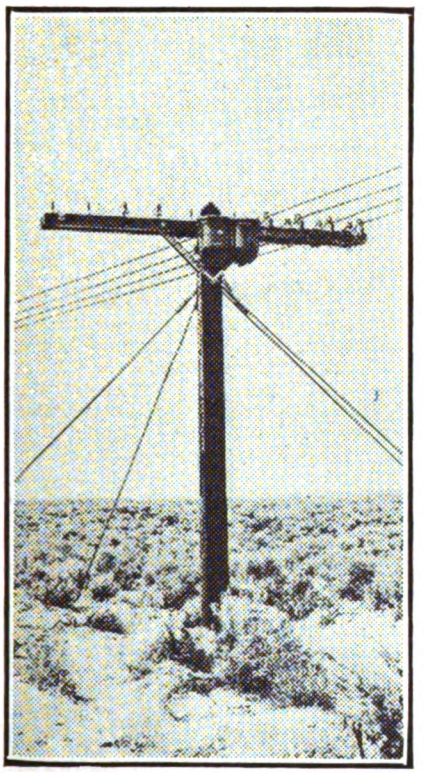
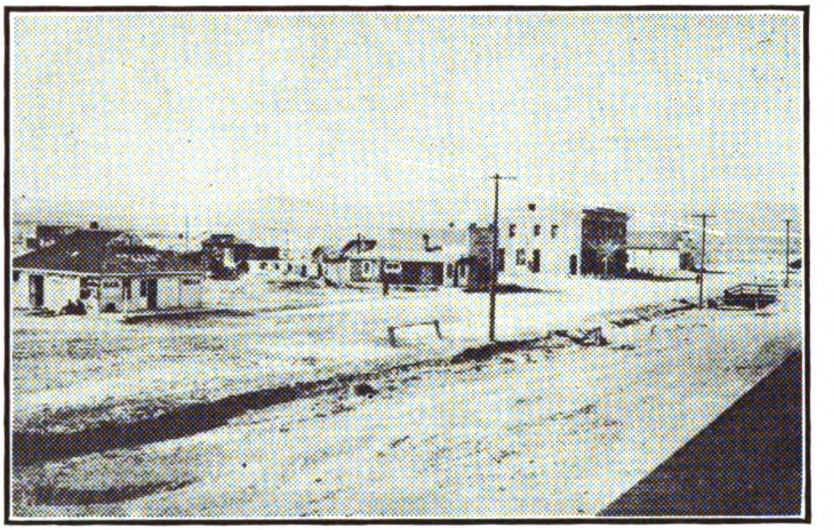


Crossing a Bad Stretch. Miles of Poles Are Set Across Lakes Varying in Depth from 18 In. to 3 Ft.

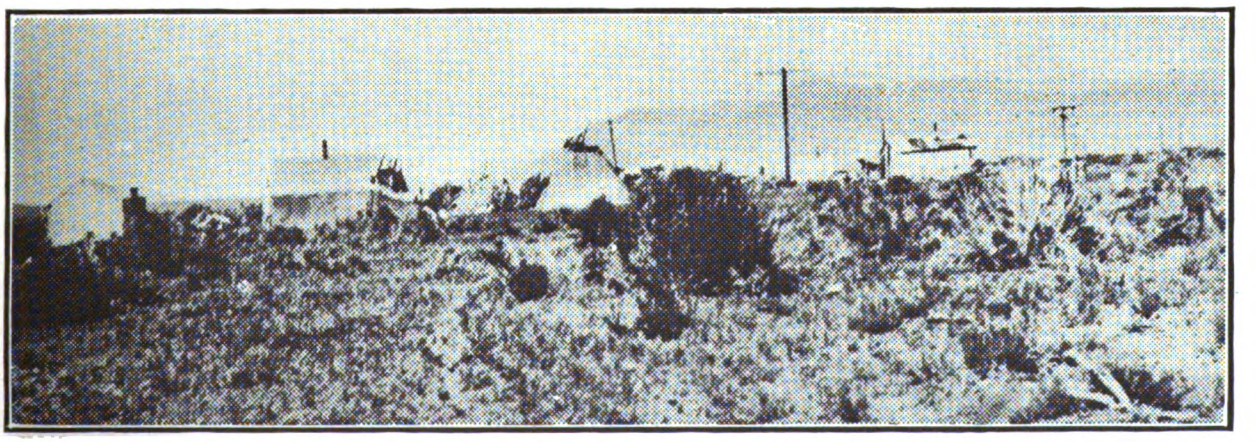


Loading Pot on the Line



Occasionally the Line Touches "Civilization"—Hazen, Nev.

The telephone was born here and it has reached its greatest perfection here; under no other conditions, except such as exist in the United States, could it have come to its highest development. With its dozens of telephone systems, Europe has no long-distance line to compare with this. The Transcontinental Line is a culmination of an art that was born in the United States, the high-water mark of a science that was created and has been developed entirely by American genius and enterprise. It is the highest achievement of practical science up to to-day—no other nation has produced anything like it, nor could any other nation. It is *sui generis*, it is gigantic—and it is entirely American.



Extremes of American History—The Transcontinental Telephone Line Passing Through an Indian Village

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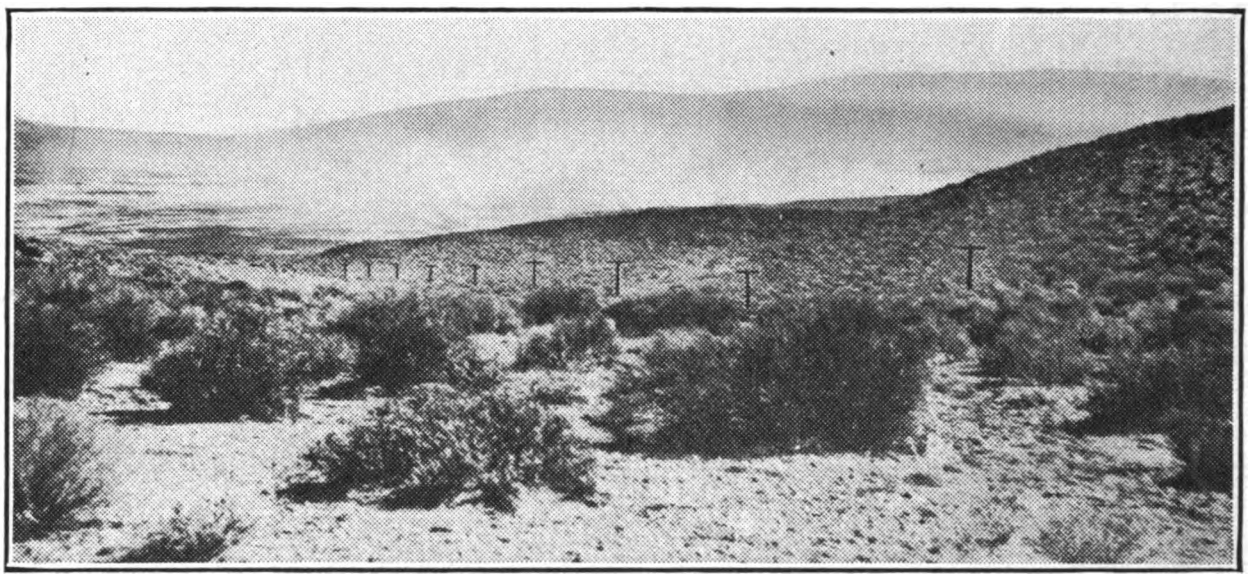


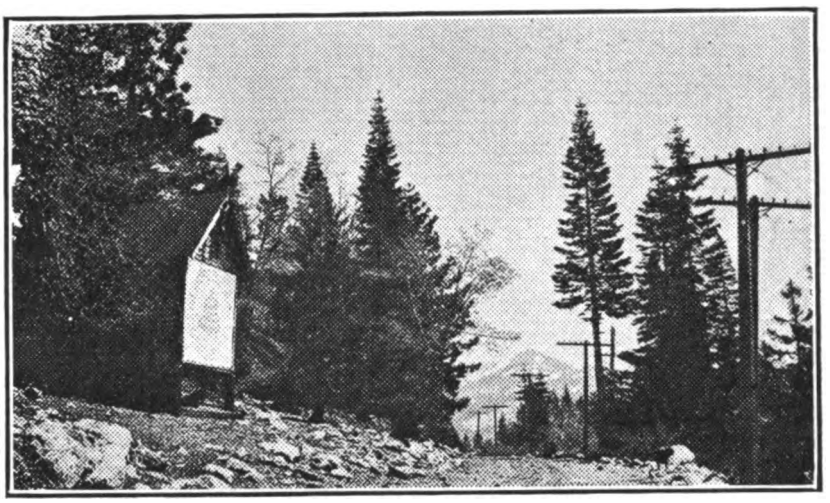
Sand and Dust Storm Along the Transcontinental Telephone Line

Critical Moments in Nature

Destiny often is determined in a flash. What Dr. Newell Dwight Hillis calls "critical moments in nature" occur constantly, but since time began these moments have passed unnoticed save by those able to see and seize the opportunities presented and so shed new light upon the world of the unknown.

Galileo found a lens in the eye of an ox and gave the world the telescope; Watts saw steam lift an iron lid and the theory of steam power was born; Columbus, sailing in search of a new passage to the Far East, noticed an unknown wood drifting near his vessel and discovered a new world. Alexander Graham Bell, leaning over a crude machine connected by wire with a similar instrument in another room, heard the sound of a twanging reed come over the wire and gave the world its greatest known means of intercommunication. Each man recognized a "critical moment in nature" and so made destiny.

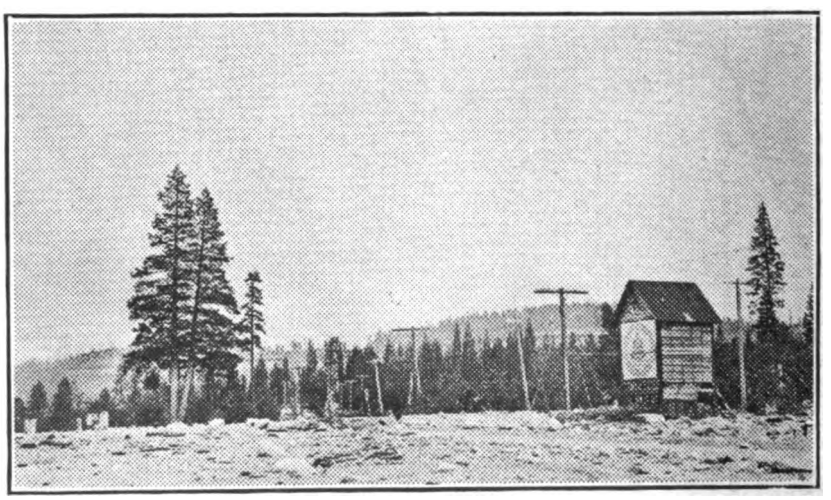
The completion of the Transcontinental Telephone Line, however, is the result of the seizure of hundreds of "critical moments in nature." One after another these moments came to the men who have been struggling to solve the mysteries of an art that was unknown thirty-eight years ago. And because they were able to see the significance of the moments that arose, they have now succeeded in bridging the continent with a talk highway that puts east and west within speaking distance and eliminates the barriers of distance in the United States.



Linemen's Shelter House, Three Miles West of the Summit of the Sierra Nevada Mountains, California

Linemen in a Blizzard

Probably nothing can better suggest the difficulties which telephone men have to encounter and the hardships they endure in some parts of the country, than the accompanying photographs of shelter houses—one a mile west of Crystal Lake, Cal., and the other three miles west of the Sierra Nevada Mountains in the same state. These houses are built along the Transcontinental Line in isolated mountainous regions and are frequently occupied by the linemen as they maintain the telephone line during the cold and storms of the winter months. The houses contain a couch, a small stove, cord-wood, and canned provisions, and are used as a temporary shelter by the men when caught in a blizzard. The latter last, on an average, from two to three days, the snow frequently drifting to depths of from 15 to 20 feet.



Linemen's Shelter House, One Mile West of Crystal Lake, Cal.

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F. H. BETHELL, Vice-President
H. F. THURBER, Vice-President
FORD HUNTINGTON, Vice-President
WALTER BROWN, Secretary & Treasurer
J. A. STEWART, General Manager
C. T. RUSSELL, Counsel

J. L. SWAYZE, General Attorney
J. S. WILEY, General Auditor
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H. C. CARPENTER, Engineer
T. P. SYLVAN, Asst. to Vice-President
E. A. GURNEE, Asst. Treasurer
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COMMERCIAL DEPT.	*PLANT DEPT.*	*TRAFFIC DEPT.*	*ACCOUNTING DEPT.*
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W. F. BAKER Metropolitan Manager 15 Dey Street	A. W. ALLEN Supt. Buildings & Supplies 15 Dey Street	R. H. BOGGS Traffic Engineer 15 Dey Street	J. A. KENNEDY Auditor of Disbursements 15 Dey Street
A. D. WELCH General Com'l Engineer 15 Dey Street	W. T. GURNEE Plant Accountant 24 Walker Street		A. J. NORMAN Auditor of Receipts 15 Dey Street
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A HAPPY NEW YEAR

Thanks. The Same to You.

—From Life.

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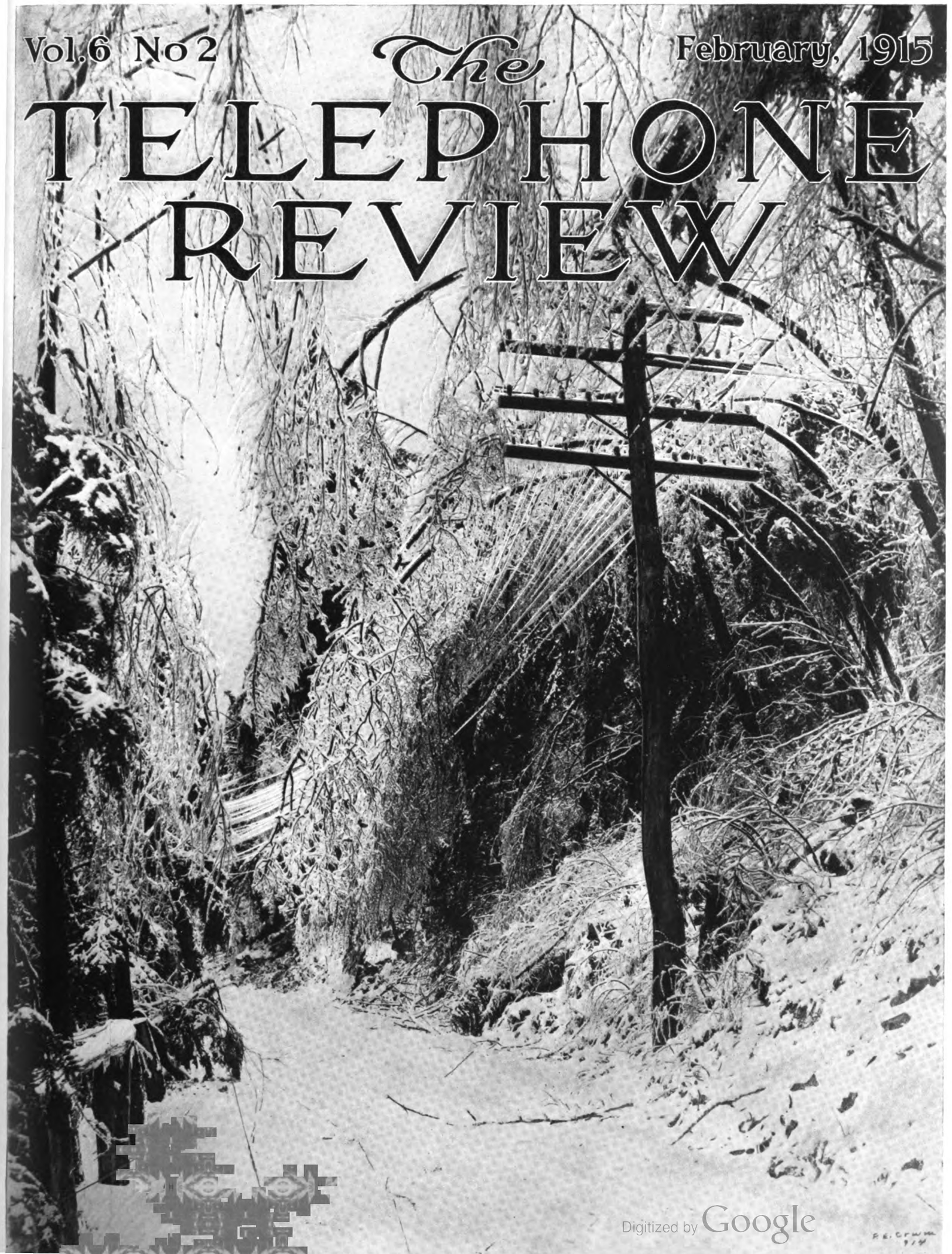
Vol. 6 No 2 February, 1915

The TELEPHONE REVIEW



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The TELEPHONE REVIEW

VOLUME·6· NUMBER·2

NEW YORK FEBRUARY 1915

The TELEPHONE REVIEW

J. D. NEWMAN, Editor.

Published monthly by the New York Telephone Company. U. N. BETHELL, President; WALTER BROWN, Secretary and Treasurer. Publication Office and Principal Place of Business, 15 Dey Street, New York.

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VOL. VI. FEBRUARY, 1915 No. 2

Liberty Bell Rings from Coast to Coast

LIBERTY BELL was brought over from England in 1752 and recast in Philadelphia the following year, when there was placed upon it these words: "Proclaim Liberty throughout all the land, unto all the inhabitants thereof." The words were not used in their original significance, but betokened the aspirations of the colonists who had sought the new world of freedom.

This bell was first to ring out in celebration of the signing of the Declaration of Independence, July 4,1776, when these aspirations were given full force and effect. It was rung every year on Independence Day until it was cracked, and since then it has been preserved as a historic relic around which has clustered a nation's reverence.

Although the voice of the Liberty Bell never was heard beyond earshot of Independence Hall, the country has reached an apex of prosperity undreamed of by the colonists and equaled in no other country, since equal liberty exists nowhere else.

One hundred years after these first peals of true liberty were sounded from its throat, the world was given the telephone, and less than forty years following, the freedom and opportunity of the Land of Liberty have made it possible for the old Bell of Liberty to ring its message across the continent.

The old worn-out Liberty Bell and the Transcontinental Telephone Line! The emblem of American liberty and a product of its inspiration!

What must have been the emotions of the patriotic hearts in Philadelphia and San Francisco who heard the sounds!

Efficiency and Production

WHAT of the relation of efficiency to production? First and foremost is the fact that efficiency and production are not synonymous terms. Efficiency is subordinate and contributory to production. The value of efficiency needs no emphasis, nowadays, but the place of efficiency in its relation to production is worthy of serious thought.

By trying to increase efficiency for its own sake, its very purpose is defeated. In such an event, the would-be efficiency results in the very antithesis of its intention. To keep the production at the maximum of quantity *and quality* is the end and aim of every design of efficiency, and in so far as the quality or spirit of the output is impaired, to that degree is the "be-all and the end-all" of efficiency set at naught.

Efficient operating does not consist in the number of calls handled, but in the number handled properly. And so with every part and department of our work. The greatest inefficiency would be a corresponding increase both in the amount of work performed and in the number of errors in it.

The practice of efficiency is not production; production is not the practice of efficiency. The two are complements, each of greater value in the presence of the other. The Golden Mean, here as everywhere, is that for which we must strive. "In nothing too much," said the ancient Greeks. In nothing too much. No, not even in efficiency.

Service and Appreciation

GOOD service brings a degree of satisfaction in itself, but good service appreciated engenders feelings of far more active import than mere satisfaction. Appreciation of good service calls forth, if not actually more good service, at least a more hearty and whole-souled service, which is bound to be of a character more nearly perfect. And so the circle of helpfulness is completed.

The following letters of acknowledgment betoken not only the warm appreciation which they express, but a realization on the part of the writers of what such appreciation can mean. So many people really do appreciate good service, but never take the trouble to make known their good feeling to those concerned, that *expressed* appreciation is the more valuable for its comparative rarity.

N. TONAWANDA, N. Y., January 12, 1915.
New York Telephone Co.

DEAR SIRS:—

I would like you to know our appreciation of service rendered us on Friday night last, by the night operator who, we have learned since, was Miss Naomi Pinchin, and by the continual good service and courtesy shown us since Friday by all of the operators at the local exchange.

During Friday night a relative, who was visiting us, was striken with paralysis and within an hour we had local doctors, and had summoned a Buffalo specialist, Buffalo hospital nurse, relatives from Ohio and other cities.

As the case was critical, it meant rapid service to permit all to make trolley and train connections to Tonawanda. The result of Miss Pinchin's kindness and good service is that these relatives from Ohio reached here on Saturday before the patient died.

It is so easy to make complaints that I feel the company should know of the alertness and courtesy of Miss Pinchin and our gratitude to all of the operators at the Tonawanda office.

Very sincerely,
(MRS.) LORETTO M. C. MAHER.

Mr. Bethell said that every efficient man and woman in the organization has contributed something, in some way, directly or indirectly, towards the completion of the transcontinental line.

One way the operators contributed is indicated by the following letter written to our Beekman Exchange in Manhattan:

UNITED SWEDISH MATCH FACTORIES
Of Stockholm, Sweden
American Branch, Tribune Building, New York
OSCAR STROMBORG

December 24, 1914.

Supt. Telephone Operating Room,
30 Gold Street, New York City.

DEAR SIR:—

I wish to congratulate you on service that you are giving the public and through you especially to your operators No. 103 and No. 71. They are

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always as courteous and accommodating as conditions will allow and I assure you that if you have many operators as cheerful as they are you certainly have lots of friends in New York.

With compliments of the season, I beg to remain

Yours very truly,
(Signed) OSCAR STROMBORG.

The following letter submitted by J. L. Parker, District Traffic Chief, is from one of our Geneva subscribers, and is much appreciated.

ROCHESTER ICE CREAM COMPANY
Wholesale and Retail Manufacturers of
PLAIN AND FANCY CREAMS AND ICES

GENEVA, N. Y., January 1, 1915.

Young Ladies, Bell Telephone Company.

Were we to close our books for the year without thanking you for the excellent service rendered us during the past season we would leave one of our principal debts unpaid.

We wish to thank you, one and all, and wish you a right Happy New Year.

Very sincerely,
ROCHESTER ICE CREAM COMPANY,
Geneva Branch,
(Signed) A. A. ALLEN, *Manager.*

Miss Pendergast, Chief Operator at Flushing, L. I., tells of a very tangible manifestation of appreciation from a subscriber: On January 6, Mr. Bullard, a subscriber, called at the Little Brown Shop and requested five boxes of candy to be sent to the Flushing central office with a letter attached reading thus:

To Telephone Operators.

In appreciation of good and thoughtful service during the past week.

L. H. BULLARD.

Later Mr. Bullard called the Chief Operator and stated that he had had serious illness at his home during that week and could not begin to thank the operators enough for their willing and courteous manner at all times.

Suggestions

THE article in this issue by Mr. W. M. Van Deusen on Protection of Aerial Cables from Chafing in Trees is an important contribution upon a subject which has been receiving close attention from engineering and plant men for many years. The methods described are admittedly but steps toward the solution of the problem. The article will serve a double purpose if it is helpful to others in overcoming the difficulties they encounter and also results in further suggestions.

Suggestions of any kind are always welcome, and we receive a great many. They are promptly referred to the department concerned for investigation as to their merits, with the name of the employees who submit them, so that full credit is received by each one who is interested enough to take this trouble.

It is not so easy as it may seem, however, to make a suggestion that can be adopted. Not long ago an employee wrote that he had heard several men in different departments say that they knew how some things could be done better than they are being done, and he thought that it would be a good idea to offer $5 for the best suggestion received by us each month.

His idea was that in this way the Company would get the benefit of more and better suggestions from the field than heretofore.

From past experience, however, it is doubtful if this would be either practical or successful.

A large majority of the suggestions that have been sent in were found to be either immature or something that previously had been tried and discarded. A great many have borne evidences of unconscious waste of time in experimenting without the guidance of sufficient knowledge to make the effort worth while. Others plainly have just been "hunches," while a few really have been valuable.

It is not the policy of the Company to adopt an idea and try it out afterward. It is tried out and must prove superior to what is being done before it is adopted. Then if something else comes along, it is subjected to the same test and, if successful, is adopted. In this way there is constant progression, and with so many experienced minds engaged upon the work it is difficult to get ahead of the pace they set.

Nevertheless, it is true that a practical suggestion on some subject may come from any one in the organization. Such suggestions not only are helpful, but they reveal ability that might not otherwise attract attention.

We hope to hear from others regarding the subject matter of Mr. Van Deusen's article.

The Operator's Voice Expression

IN the October-November, 1911, number of THE TELEPHONE REVIEW there appeared an article entitled "The Art of Expression as Applied to the Work of the Telephone Operator." This article was quoted either in whole or in part in many of the papers published by various telephone companies and in several engineering journals. One telephone company, the Southwestern Telephone & Telegraph Company, went so far as to distribute the article in pamphlet form among the operating forces in connection with a campaign to popularize the service through specializing on *courtesy*. How successfully they did so may be judged by the following letter which was received from a subscriber who is himself attached to a large public service corporation:

THE MISSOURI PACIFIC RAILWAY COMPANY.
ST. LOUIS, IRON MOUNTAIN & SOUTHERN RAILWAY COMPANY.
PUBLICITY DEPARTMENT.
ST. LOUIS, MO., November 17, 1914.

Mr. M. B. Downing, General Traffic Sup't, Bell Telephone Co., City.

DEAR SIR:—

I take this means of expressing my appreciation of the politeness displayed by the telephone girls of the Bell Company. I have noticed for some time past that when one picks up the receiver his ear is greeted with a *cheery* "Number, please?" and that after you have stated it there is a *grateful* "Thank you!" Should you happen to receive a wrong number, when you call attention to the fact there is a very polite "I beg your pardon, sir."

Being associated with a corporation which employs forty-odd thousand people I know how difficult it is to make all employees realize the importance of being polite to the public at all times, and I desire to congratulate the Bell Telephone Company for having succeeded so splendidly with its operators. I think that your company will find that these little courtesies on the part of the girls will go a long way toward creating friendly sentiment among the people for the corporation and its officials and employees. The service impressed me so favorably that I thought it worth while writing you on the subject.

Very truly yours,
(Signed) J. W. KEARNEY,
Manager of Publicity.

Such evidence of good results is very gratifying. Surely, "The Voice with the Smile Wins!"

A Correction by Request

LAST month we printed an account of how an explosion occurred in Bamberger's department store in Newark, N. J., and how the lives of two men were saved by an operator in our Market exchange. Our readers, no doubt, pictured to themselves a half-conscious man dragging with waning strength the senseless form of his companion in search of air and succor, when with a mighty effort he reached a telephone and with his last breath told their plight to the ever-ready operator, then succumbed to the deadening fumes—all as described in the story; then, also as related, the operator with full realization of the tragedy which she alone could avert, almost frantically trying line after line to the big store until, oh, joy! an answer came and she was able to rescue the perishing. We can imagine, also, the calm satisfaction of the operator as she looked back upon those few moments, that seemed like hours, in which the record of the emergency value of the telephone was unbroken.

The story is not an uncommon one in the annals of the telephone; it bore the verisimilitude of truth, but, alas, it has a sequel. It was all a hoax!

The operator did her part, and as a demonstration of the value of the tele-

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phone it was perfect, but it was only a demonstration. An employee of the department store faked the explosion and all the tragic details, thinking it was a good joke to play on the operator, who accepted the statements made by him and his accomplices and wrote the account of it which we printed. A few days later the trickster was discharged. No word was sent to the Company about the humbug, but when the printed story appeared, the store immediately explained the circumstances to our Newark office and requested that a correction be printed by us this month. We are glad to do this for our good friends, and at the same time take occasion to remark that practical jokes of this kind are unnecessary to prove the efficiency of our service, and the perpetrators really become their own victims. What is far worse such jokes may interfere with operators rendering vital assistance to others in cases of actual need.

A Modern Trojan War

RECENTLY an article on Troy, N. Y., which appeared in this magazine was reproduced in the Troy *Daily Times*. A copy of that publication reaching Mr. M. C. Aspinwall in Sanford, Fla., brought forth the following very interesting letter from him. We are indebted to the Troy *Daily Times* for the privilege of printing it, and if any of our readers can contribute further information on the subject, they are cordially invited to write to us.

SANFORD, FLA., December 29, 1914.

Troy Daily Times, Troy, N. Y.

In your *Times* supplement, date of December 26, under the head of "Telephone Union," the statement is made that the telephone was introduced in Troy by the late Geo. P. Ide and the late Wm. S. Earl, which statement is decidedly incorrect, as neither of these gentlemen had anything to do with the introduction of the telephone into Troy. In the summer of 1877 the writer of this communication, then the Troy manager of the Atlantic & Pacific Telegraph Company, brought the first telephone into Troy, and heard the first word through it which was from Albany over a circuit made up of the wires of the above-named company, and in connection with C. H. Sewall, of Albany, was chiefly instrumental in the formation of the original company, the Troy Telephone Despatch Company, and was the superintendent of that company during the first year of its existence.

The original incorporators and stockholders of the company were Chas. S. Woodruff, a well-known homeopathic physician of Troy; John E. Porter, a lawyer, with offices at No. 280 River street; Geo. A. Waters, of Lansingburgh; C. H. Sewall, of Albany, and myself. The first officers of the company were C. S. Woodruff, president, which position he held several years, J. F. Porter, vice-president and Geo. A. Waters, secretary and treasurer.

The first stock sold to anyone other than the original incorporators was sold to the late Wm. A. Thompson, of the firm of Jno. L. Thompson Sons & Co., and the next person to become interested in the company was C. M. Wellington, then cashier of the Manufacturers National Bank, and through his solicitation Geo. P. Ide and Gardner Earl (not Wm. S. Earl) became stockholders some time during the first year of the company's existence. Wm. S. Earl's interest in the company presumably began after the death of his son Gardner.

I could tell you a great deal about our struggle during the infancy of the company but I presume it would be of no interest to your readers. I may add that of the original incorporators and early stockholders I am the only one living to-day.

Very truly yours,

(Signed) M. C. ASPINWALL.

The Storm in Tuxedo

A PARTY of gentlemen were automobiling along the Paterson Turnpike, from Paterson toward Suffern, a few days after December 5, 1914. It was a beautiful, sunny day. The temperature of the air was that of the early fall. There was very little indication among the wires, trees or surrounding fields that there had been a storm. Approaching Suffern it was noticeable that the hills seemed to be gray, but the reason for it was not apparent. Leaving Suffern, the road turns to the northwest and rises rapidly, going through the Ramapo Hills along the Ramapo River. The car traveled along this road at a good speed and soon arrived among the hills, where the delicate gray which the party had remarked at the distant view of the hills was explained by the thick coating of ice formed on the trees by the sleet which had fallen for two or three days. The scene was one of surpassing beauty, for the sunshine was reflected brilliantly by the ice-covered twigs and branches.

Passing from Suffern to Tuxedo the party had journeyed from the Temperate to the Arctic Zone. When the car arrived in the midst of Tuxedo Park every tree, twig, pole, crossarm and insulator was covered with two or three inches of ice. The trees were bowed down over the road, the heat of the sun was loosening up the ice and large quantities were dropping on the car, making it almost unsafe to travel. The party was appalled by the sight, not only on account of its beauty, but on account of the awful havoc the storm had wrought among the beautiful trees on the lawns of Tuxedo Park.

The storm had circled New York, cutting off all the open wire lines leading from the metropolis to other parts of the country. The peculiarity of this storm was that it was principally sleet, the rain falling slowly and freezing solidly as it came in contact with the wires, poles, crossarms or trees.

For three or four days the drizzle had continued and the freezing process gone on. The wires, already heavily loaded, could not stand the extra weight they were called upon to support. The trees on the Ramapo Hills and through the Tuxedo Valley succumbed to the immense amount of pressure on their branches. Elms over one hundred years old were stripped of their beautiful limbs. Slim, tender white birches were bowed to the ground.

It will probably be years before Tuxedo Park can regain its original beauty.

Several photographs were taken and one of them is reproduced on our cover this month.

Verses on the Transcontinental Line

THE following poem was inspired by the Transcontinental Telephone Line. It was written by Miss Agnes Lardner Mack, and printed in the Lockport (N. Y.) *Union Sun* of January 27. Miss Mack is Secretary to the Board of Education of the city of Lockport.

Telephony

The nation sees an era dawn triumphantly to-day,
An era of development that makes the lustrous ray
Of all achievements of the past in Science's advance,
Look dim beside the dazzling light that speech transmission grants,
And celebrates with conscious pride this service-giving art,
Telephony from sea to sea, that distance cannot part.
The tiny impulse of the voice, with vivid flash and swift,
Is caught, conserved and reproduced without the slightest rift,—
One hundred million people cheer the triumph of the test
That brings in union north and south, and binds the east and west:
That kills restraint of centuries, and makes us neighbors all,
The better for the comradeship that human voices call.

AGNES LARDNER MACK.

Another poem on the subject appeared in the New York *Times*, February 1, which is worth reproducing.

The Transcontinental Telephone

To knit two oceans by a tenuous thread
Whereon man's voice may cross from shore to shore
And bind a nation close: what magic lore,
What alchemy is this, of witchcraft bred!
Yet is this deed no kin to Black Art dread,
But harbinger of an abundant store
Of blessings for mankind and one pledge more,
That Peace and Progress, after all, are wed.

By this accomplishment of master mind,
In the unleashed commercial race we run
We shall accelerate our heady pace.
But a far deeper import will it find
In heralding life ended, life begun,
And bringing loved ones almost face to face.

REGINALD MCINTOSH CLEVELAND.

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The Development of the Police Patrol Flashlight System in Manhattan

By J. N. C. Graham, Division Equipment Engineer

New Type Police Department Signal Box on Edison Pole at 40th Street and Madison Avenue.

Eventually this pole will be equipped with a flash light lantern which will conform to the design of the pole.

THE present police patrol telephone system has been in service in Manhattan since 1902. Since the first boxes were installed, the system has been gradually extended and there are now in service in Greater New York, in connection with this system, forty-eight monitor switchboards and 836 police box stations. The system is in fact a collection of systems, each independent of the other. The switchboards are located in the precinct station houses. Telephone lines extend from them to the police boxes located at convenient points throughout the several precincts. With the exception of the old Tenderloin precinct, there are from four to six boxes on each line.

Up to the present time the principal function of the patrol system has been to provide a means for patrolmen to communicate with precinct headquarters without leaving their posts to use private or public telephones. The police boxes have always been provided with bells, the same as regular subscriber stations. Signaling the patrolmen from the station house by means of a bell has, however, been rather uncertain, as the patrolman cannot hear the bell when he is any considerable distance from the box. As a result of this, the Police Department have several times within the past five years considered with the Telephone Company the question of developing a flashlight signal system to enable them to call the men on duty to the police box. Not until the latter part of 1913 was the way cleared and active steps taken to make an experimental flashlight installation as a supplement to the existing patrol system.

Ten boxes in the 23d precinct were selected and connected to a 40-line switchboard located in the station house. These boxes were removed from their original positions on buildings and installed on special poles which were placed by the Department of Water Supply, Gas & Electricity. The installation was not altogether satisfactory but indicated that a system of this kind, properly installed, would be a valuable acquisition to the Police Department.

Shortly after the completion of the above installation, the Police Department made arrangements with the New York Edison Company to install the boxes and signal lanterns on the Edison poles and to tap the arc lamp circuits in these poles, thus greatly simplifying the question of furnishing current for lighting the signal lamps. To do this, it was necessary to provide a police box and lantern which would conform to the design of the Edison poles and which would be approved by the Municipal Art Commission.

Work on the development of the new police box and of the lantern was commenced in June, 1914. The box was developed by the Equipment Engineer's force of our Company and the lantern by the Western Electric Company, both companies coöperating with each other

Demonstrating the Operation of the Citizen's Call Button on New Type Police Department Signal Box on Edison Pole at 6th Avenue and 29th Street

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Exterior View of the New Box Showing Details of Design

Note the Citizen's Call Button and the instructions for operating it. The instruction and number plates are enameled.

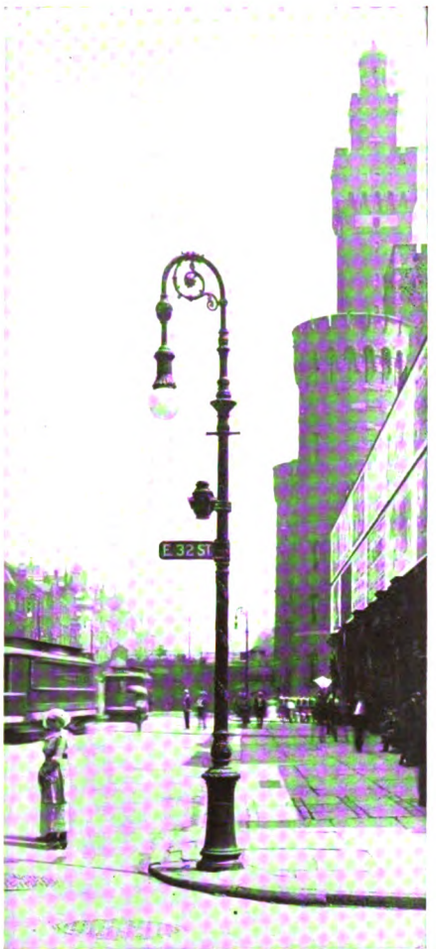
and with the New York Edison Company, who designed the architectural features of the equipment. When the box design was finally satisfactory to the Police Department, the Edison Company and the Telephone Company, it was submitted to the Municipal Art Commission, who approved it on September 15.

Orders were immediately placed for ten boxes to replace the ten old type boxes. These had, during the process of development, been transferred from the special poles to the Edison poles and connected to the P.B.X. by direct circuits, in order to give the revised system a try-out before the substitution of the permanent equipment. The installation of the new boxes was completed on December 14. At present the poles on which they are installed are equipped with temporary lanterns.

The new flashlight will make it comparatively easy for the Precinct Commander to call the patrolman in any zone equipped with the system. The officers need not remain on fixed post to receive these calls as the signal lanterns are generally so located on Edison poles at cross streets as to be plainly seen from all directions. The lantern is designed to permit of a green light being seen at a distance of from 1,500 to 2,000 feet in bright sunlight.

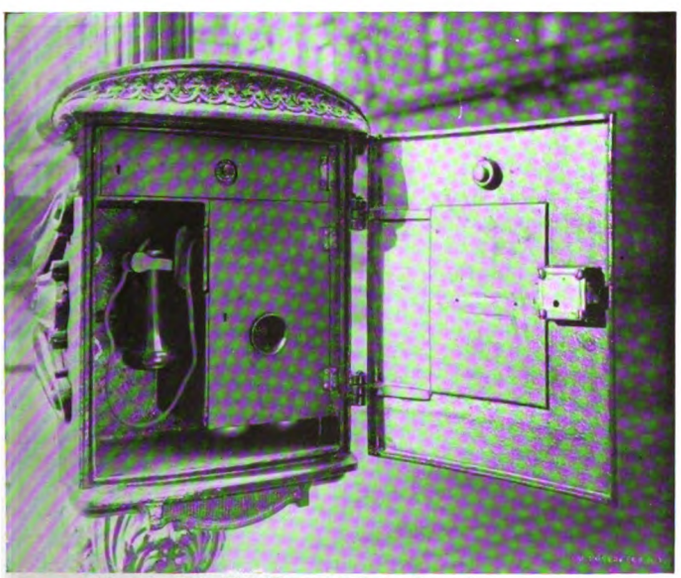
A novel feature of the new box is the citizen's call button. This button is prominently located on the outer door of the box and is so wired that anyone can operate it and light the signal lamp to summon a patrolman. The operation of this button does not give a signal of any kind at the station house. It merely closes the local electric light circuit through the signal lamp.

Each of the new boxes contains, in addition to a standard police telephone unit, special signal apparatus which is connected to the telephone line so as not to interfere with the use of the line for telephone purposes after the patrolman has answered the flashlight signal. This apparatus consists of an alternating current relay and two condensers. The relay is bridged to the ringer of the telephone set. Its function is to close a branch circuit from the Edison mains, thus lighting the signal lamp on the pole. The condensers prevent vibration of the relay and sparking at the contacts which close the Edison circuit.



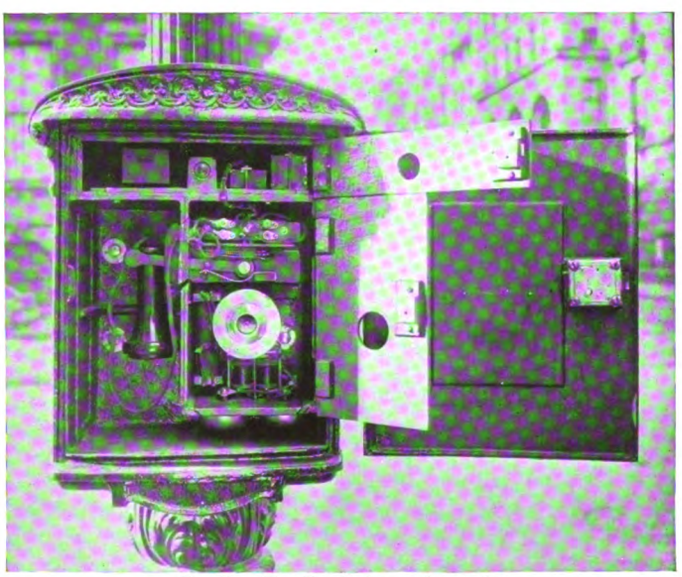
The Type of Lantern Which Will Eventually Be Substituted for the Temporary Lanterns Now in Use

This lantern is equipped with an 85-watt Tungsten lamp which is fed from the Edison arc lamp circuit in the pole. Each of the four sides and the bottom of the lantern are equipped with stereopticon lenses designed to show a green light when the signal lamp is lighted. This light can be seen at distances of from 1,500 to 2,000 feet in bright sunlight.



The New Box with Outer Door Open

Note the inner doors which protect the apparatus in the telephone and in the flashlight compartments.



The New Box Ready for an Inspection

This view clearly shows the flashlight apparatus on the special mounting plate and the wiring between the flashlight compartment and the telephone compartment. The latter is equipped with a standard police box telephone unit. Both the flashlight unit and the telephone unit can be easily removed from their respective compartments for inspection and repairs.

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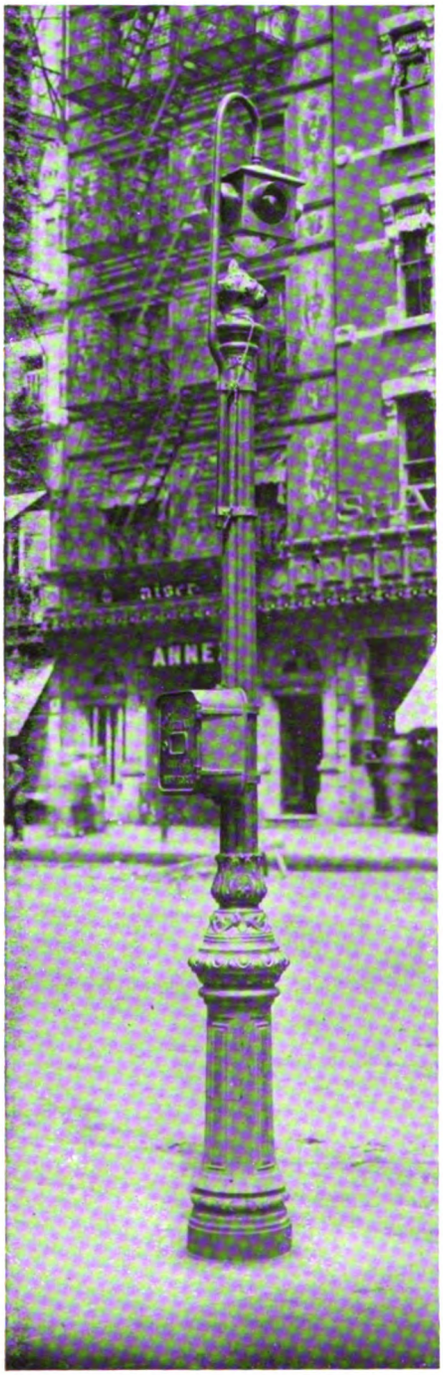

Old Type Police Department Signal Box Installed on Special Pole at 30th Street and Broadway

This is one of the initial experimental installations. Originally the signal lamp was contained in a green glass globe which crowned the top of the pole. With this arrangement, the signal light was not as clear as with the proposed new lantern; also the apparatus in the police box was badly congested.

The signal apparatus is attached to a special mounting plate and is housed in a separate compartment in the top of the box. The mounting plate and wiring are conveniently arranged so as to permit of easy access and removal for inspection and repairs. A door on the front of the compartment protects the apparatus when the patrolman has the outer door of the box open for the purpose of telephoning.

There is arranged on the switchboard at the station house a key for each of the telephone lines. The operation of this key sends out on the line at alternate intervals direct and alternating current. The alternating current rings the bell and operates the relay in the police box and lights the signal lamp for periods of four seconds at intervals of three seconds until someone answers the call.

When the receiver is removed from the hook at the police box, direct or alternating current operates a relay at the station house. This automatically disconnects the signaling current from the telephone line and restores the line to its normal condition for telephoning. When the line is in this condition, the ordinary telephone line signal instantly appears in front of the Sergeant operating the switchboard in the station house, thus indicating that the patrolman has answered the call. The Sergeant then proceeds in the same manner as when answering a normal telephone call.

Although the new equipment has just been installed, the experimental system has been in actual service since August. It has apparently been satisfactory to the police officials as they are planning to install it in other precincts during 1915. The system will, no doubt, be extended to other portions of the greater City as quickly as conditions permit.

Reminiscences of an Operator

ABOUT ten years ago, when I first became an operator in the Schenectady telephone office, the Company was known as the Hudson River Telephone Company. There were 26 operators including the chief operator, 2 supervisors (1 local and 1 toll), and 1 information operator. There were 14 local positions of which 7 were used and 1 "B" position, also 8 toll positions but only 4 used.

The toll rates in the day time were about the same as at the present time. After 6 P.M. the rates were reduced one-half, and needless to say the heaviest part of the toll work was handled in the evening. Most of the toll business done during the day was from the large manufacturing plants, for which Schenectady is famous, and from business houses which are closed after 6 P.M.

The business increased very rapidly for the next three years. At the end of one year there were about 40 operators and the 14 positions on the local board were increased and 12 new positions added.

During certain hours in the evening and on Sundays there was no plant man on duty, and the operators were often called on to use their own best judgment in cases of emergency. I remember an instance when the ringing power was off on a Sunday morning in the summer of 1906, and it was necessary to send an operator to the Manager's house, a distance of about seven or eight blocks, and not on the car line. She ran the whole distance and when she arrived was so exhausted she was unable to state what the trouble was. In the meantime one of the operators answered a call from a near-by drug store and recognized the voice of a telephone man. She immediately asked him to hurry to the office as the power was off. In a very short time he had reached the office and everything was O. K.

Another emergency happened about five years ago. One evening about eight-thirty the tarpaulin, which is used to draw over the switchboard in case of fire, was blown down by the wind. There were about seven or eight operators working at the switchboard and they were completely covered with the curtain, also the dust which it had collected. It was impossible to get a plant man immediately, so the operators rose to the emergency by standing on the brass rail and holding up the curtain with one hand and operating with the other. The supervisor in charge of the office had to climb up on top of the switchboard and drag the heavy curtain up.

About this time a matrimonial wave struck Schenectady, and twenty-six of our most desirable operators were swept away by it within one year, which was one of the worst calamities that has happened during my term of service.

(MISS) ETHEL M. V. DOHIG,
Evening Chief Operator.

Another Hero

Another telephone man is the hero of a rescue. Charles A. Rogers, District Wire Chief at Kingston, tells this experience, which has its amusing side as well as the more serious aspect:

Our combination man, R. V. Burton, stationed at Fleischmann's, was the means of saving a building from burning down. He went out in the country to install a telephone, and when he got to the subscriber's premises he saw smoke coming from the opposite side of the building, but thought it was a bonfire.

After looking the job over inside, and completing the drop loop to the pole, he started to make attachments to the house, when he noticed smoke pouring out under the eaves. He knew there were two women alone inside, and rushing in to them he said: "The house is on fire." The women started to cry and wring their hands. "Come," he shouted, "this won't do; you have got to help me carry water and put it out."

The fire was located upstairs and had started between a partition and the chimney. With milk pails and water drawn from the horse trough, the flames were extinguished in about an hour.

One of the comical incidents about the case was that the women kept throwing the water on Burton. Nothing is now too good for our combination man at this home.

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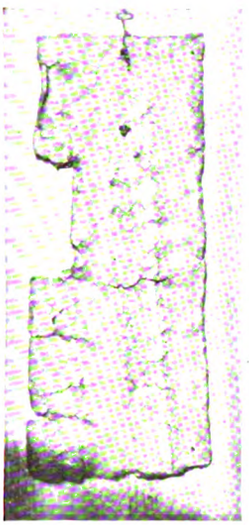
Protection of Aerial Cables From Chafing in Trees

By W. M. Van Deusen

Supervisor of Pole and Aerial Cable Placing, Long Island Plant Department



1. Sheathing which had become crystalized from vibration against limb of tree

THE protection of aerial cables against damage in trees has long presented a difficult problem to the construction and maintenance forces. Either from improper original construction or from changing tree conditions resulting from growth, cables have a well recognized tendency to chafe against the trunks and branches, or to lie in the crotches of trees through which they pass. A hole may finally be worn or torn through the lead covering; or in time, through constant vibration on the sheath may become brittle and filled with tiny cracks (crystallized) after which moisture easily finds its way to the wires within. (See illustrations 1 and 2.) Round wooden molding and tubes of galvanized sheet iron have been generally used as a covering to prevent contact with trees, but their use has never solved the problem. During the last year a special study of this subject has been made in the Long Island Division with gratifying results.

Good first construction is the primary requisite for clear tree conditions; but even with the exercise of greatest care, it is impossible to run strand so as to clear all interference in dense growths. A twenty-four-inch saw judiciously used is of inestimable value, but trimming rights are frequently unobtainable.

Many of the worst conditions found in old plants can be remedied by the simple expedient of raising the cable, placing an extension arm, or slightly leaning a pole. By all means these methods should be used where the height of poles and other conditions will permit. It is assumed that only where such treatment was not practicable have wooden molding and galvanized tree guards been used. The common fault with both these articles is that they do not keep pressure from the cable, but act simply as a shield between tree and cable to take up abrasion. The molding is, for ease of manufacture, usually constructed of some light, comparatively soft wood, such as spruce. It soon wears; it slips on the cable; and in crotches of trees it breaks away, frequently leaving the cable twisted over the strand. Aside from its tough wearing qualities, the galvanized tree guard is no better; in addition, it has the serious defect of being sharp at the ends. Frequently this fault is the cause of more serious cable failures than could result from the trees in which the guards have been placed. There are many cases on record of cable sheaths having been gouged or broken by the end of the galvanized tree guard itself. (See illustrations 3 and 4.)

3. Galvanized tree guard broken away and liable to damage sheath of cable

2. Split sleeve placed on cable over tree-trouble

The basic fault of these methods is that the "protection" is attached to the *cable*. The new methods developed by the Long Island Plant Department differ fundamentally in that all attachments are made to the *strand* and *none to the cable*, which is left freely suspended in the rings.

4. Sheathing gouged by galvanized tree guard

The pull-off shown in illustration No. 5 can be used to advantage whenever the cable lies between two limbs and in contact with one of them. It is not essential that limbs be opposite each other; one may be ten to fifteen feet from the other along the direction of the strand. The pull-off is constructed of eight strands of No. 14 N. B. S. galvanized iron wire, or its equivalent. This may be attached to the tree either with a standard galvanized No. 0 screw-eye, as illustrated, or with a three and one-half inch galvanized lag screw. It is important that the lag or screw-eye should be placed at right angles or perpendicular to the pull-off so that the strain comes across it and does not tend to strip the threads in the wood. One pull-off may serve to clear several branches at once. It is neat, does not damage the tree, and has the advantage of being almost invisible from the ground.

The tree hook (see illustrations 6, 7 and 8) is made of $\frac{5}{8}$ inch galvanized steel with a lag thread cut on one end; the other end is similar in shape to a standard style "C" ring. This is of general use

5. Pull-off

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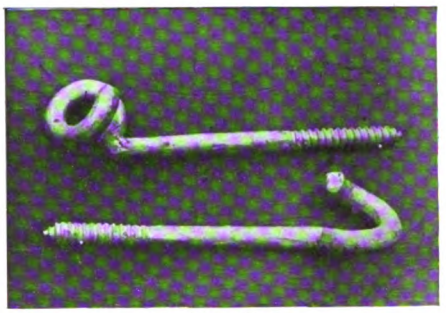
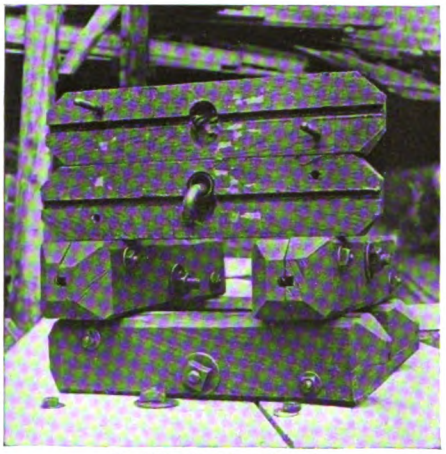


6. Tree Hooks

wherever the stock of wood in a branch or trunk of a tree is heavy enough to take and support it. The tree is first bored with a 7/16 inch to 1/2 inch hole; the hook is then screwed in to the desired depth—the farther in the more rigid it is and the less liable to bend. Then with the ring end horizontal, the strand is slipped in place, when a one-quarter turn places the hook upright and locks the strand in place. This hook not only serves to push the strand out from the tree but will raise it up, a fact which renders it particularly valuable for use in the crotches of trees.

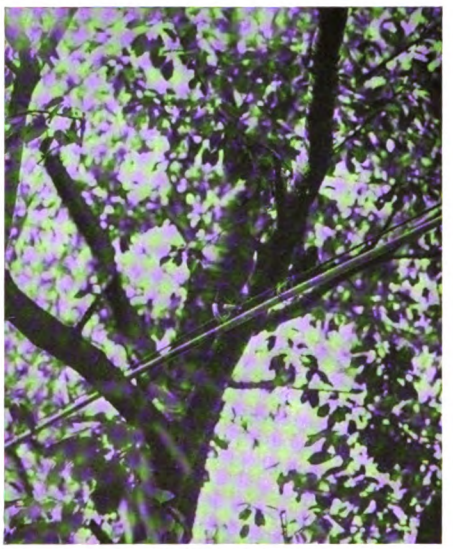
The wooden tree guard (see illustrations 9, 10 and 11) is constructed of two oak blocks, grooved in the middle to take the strand, and provided with an interior clamp for fastening the block rigidly to it. The blocks are beveled at the ends to allow a branch, should it sway off, to move back on the block without tending to displace it. In obstinate cases, such as occur with limbs of willow or poplar trees two or three inches in diameter, it is sometimes necessary to place two blocks on the strand, butted end to end, with the inside beveled ends sawed off.



9. Wooden Tree Guards

A combination of the wooden tree guard and a pull-off upward serves nicely to clear old cables from crotches of trees in municipalities where the placing of the tree hook would not be permitted.

These different methods have



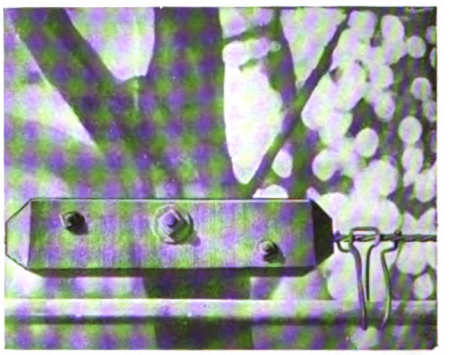
7. Tree Hooks in Use

10. Wooden Tree Guards in Use

8. Tree Hooks in Use

now been in use and under observation for over eight months, under some of the worst conditions imaginable and are standing up well. While the try-out indicates that better results have been obtained than with any previous methods, certain objections have been suggested. It is possible that the galvanized iron wire may finally rust, particularly where it chafes against the screw-eye and the strand. There may be enough motion of the strand through the tree hook to wear off the galvanizing and rust both the strand and the hook. There is now on record one case of a strand being chafed so badly by a tree that in twelve years it rusted completely through. The hook in the tree tends to ground the cable, which is not thought desirable.

The methods here described may prove to be a step toward an entire solution of the problem.



11. Wooden Tree Guards in Use

Help "Boost" the Service

THE officials of the Company have for some time been endeavoring to establish a service throughout the country that will meet in every way the demands of the public, and prove most satisfactory to subscribers. In former issues of the REVIEW articles have often appeared setting forth the necessity of coöperation between the Company and its employees, so that the best possible service might be obtainable. Perhaps it has seldom occurred to a majority of the employees that in order to render good service to our customers, it is important to establish good service within our own limits as well as outside. By that I mean it is necessary for each employee to do his utmost to help the other in the discharge of his duties.

I have often been in a position to witness cases where one man would be pressed for assistance and the fellow next to him, although slack for the time being, would never even offer his services to help the other fellow out with his burden. This is not the proper spirit and should not exist between a body of workers such as are to be found throughout the Company, for we are all intelligent enough to know better. But in some cases it is not a matter of intelligence as much as it is selfishness. Some men are of the opinion that they are paid their salaries to do just a certain amount of work and when this has been accomplished they are entitled to a rest. Don't be the one to think this way, but when your share is done, be the first to offer your assistance to help out your "neighbor" and you will notice in future an improvement in the service.

"Boost" but don't "knock" your fellow workmen.—CHARLES P. KNUDSON, L. I. Plant.

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The Power of Personality in Communication

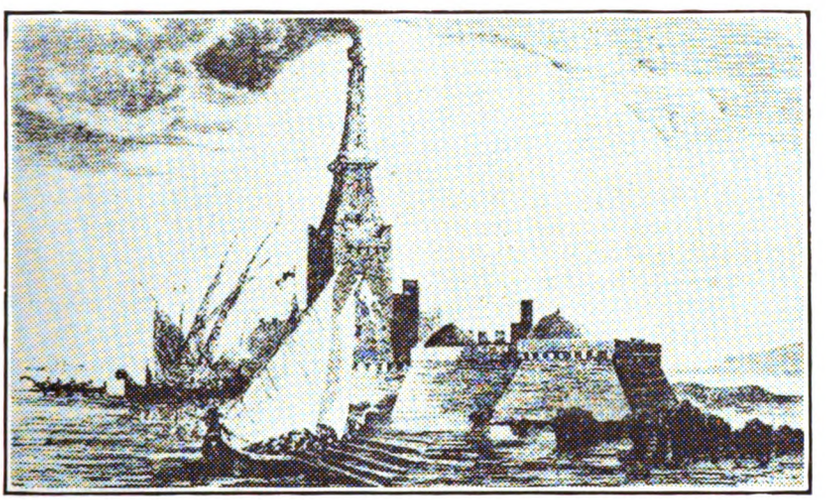
Realized in the Transmission of Speech by Telephone

Historical Review of the Development of Communication, from Ancient to Modern Times

"SPEECH is one of our grand distinctions from the brute," wrote Channing, which only expressed in different words what Quintilian wrote centuries ago: "God . . . has impressed man with no character so proper to distinguish him from other animals, as by the faculty of speech."

It might truly be said also that nothing distinguishes one man from another more than his speech.

Speech, therefore, may be termed the evidence of man's superiority in creation and of man's superiority among men.



The Pharos of Alexandria, One of the Seven Wonders of the World, 3d Century B. C.

The purpose of speech is the communication of ideas. A witty Frenchman has said, "Speech was given to man to disguise his thoughts," but even if this be true there is an idea behind the disguise. Speech has determined the course of the world's history. Before "Adam dolve and Eve span," the whisperings of the serpent and the seductive pleadings of the woman caused humanity to labor for existence. It may not be irreverent to conjecture whether the course of the world would have been so ordered if these fatal communications had not been made by word of mouth—for example, if a messenger, a letter, a telegram, or even a wireless had been sent! At the Tower of Babel the first gigantic engineering enterprise on record was abandoned uncompleted because, although speech was possible, the understanding was absent through the confusion of tongues, and the dispersion of the nation followed.

The communication of ideas by means of speech, therefore, has been dependent in all ages, first, upon the proximity of the speakers to their hearers, and, secondly, upon the use of a common language.

All ties of kinship and affection were broken with the severance of communication when people of the same race and language first went out to populate new parts of the earth, and there is a record of toilsome effort from the dawn of history until this day, to devise a means of communication which would be effective. All these efforts were directed toward supplying a symbol for the thing signified, providing a secondary instead of primary means of communication, a substitute for direct intercourse which distance made impossible.

Not until the success of Alexander Graham Bell's invention was the intermediary eliminated, and the human voice conveyed to the listening ear, with all its tones and modulations.

"Without knowing *the force* of words it is impossible to know men," wrote Confucius, and the force of words is in their utterance.

Charles James Fox, the famous English statesman and parliamentarian, was congratulated by a friend one day on a speech delivered the night before and printed in the *Times* that morning. Fox replied that if it read well it must have been a very poor speech.

Everyone is hearing of the wonderful power of Billy Sunday in his revivals, but if you read one of his sermons, you will wonder why the thousands who constitute his audiences night after night are worked up to the highest pitch of enthusiasm.

The power of words, then, is in their utterance, which means that they are powerless or powerful according to the personality behind them. The telephone alone of all means of communication conveys the words and the personality behind them. It gives our words and personality wings and they fly where we would have them go.

But this achievement has not been wrought in a day, and only against its background can it be fully appreciated.

The history of communication is the history of human progress. Hand in hand with the gradual development of intercourse, there has been growth in fulness of life. The fundamentally social nature of man has made this growth inevitable. Only through communication could the experience of one influence the action of another, and only through the interchange of the lessons of experience could the well-being of the race advance.

Communication is of two sorts—distant and near. Language early met the demands of the latter, but the development of long-distance communication has been slow.

In ancient Egyptian wall paintings may be seen pictured the earliest method of distant communication—the messenger. Bearing the message on a roll of papyrus, the ambassador comes with great ceremony from the Queen of Kush to the Prince of Upper Egypt. The variations of communication by messenger were many. Runners were employed, and messengers on horseback were sent to outstrip them, if the opposing side was on the alert.

The beacon lights which told Greece the news of the fall of Troy; the shafts of the sun reflected from polished shields seen after Marathon; the Pharos, one of the seven wonders of the world, a kind of lighthouse which sent "a light by night" and also "a cloud by day"—all these early methods of distant communication were limited in scope, often being misinterpreted. Attempts were made to transmit exact information by means of combinations of torches corresponding to letters, but these never reached any degree of perfection.

With the downfall of Rome and the influx of barbarians came the Dark Ages, when communication was extremely limited and the progress of civilization seemed at a standstill, but was in reality only storing up new vigor. The Bayeux Tapestry, woven about 1100 A.D., shows

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William the Conqueror receiving news from a herald, and again, William setting fire to a hut as a signal to his troops that war is to begin; still the ancient methods of communication—the messenger and fiery signals. These, however, were supplemented in the Middle Ages by the use of carrier pigeons. The Crusaders learned the value of pigeons as messengers from the Mohammedans, and after the Crusades pigeons were widely used in Europe.

Medieval Mail Carrier Increasing Speed by the Use of Stilts—1464

Another slight step in advance was made in 1464 when a restricted postal system was developed by Louis XI. In many cases the letter carriers used stilts to increase their speed.

By the middle of the fifteenth century, when Europe was lifting her head from her long nap, the invention of movable types came to hasten her awakening. The art of printing, that great stimulus of the Renaissance, has grown steadily in influence and power as a means of distant communication, until to-day it bears its tidings everywhere, slowly, indeed, but in unlimited scope.

With the new interest in science which was a part of the Renaissance, Galileo's invention of the telescope opened the way for further development in transmitting messages by optical signals. Amatons, a French physician, attempted a system of signaling by flags and cross bars on poles, the telescope being used in deciphering it. This was a forerunner of the flag and arm signal still in use. Another French inventor, Gauthey, tried to utilize the property of metals to transmit sound, by developing a system of metallic tubes. This was not successful at the time, but was the precursor of that fascinator of late-Victorian childhood, the speaking-tube.

The Revolutionary War developed a rude system of signaling in this country. A pole with nothing on the top meant danger—this sign being used to avoid arousing the suspicion of the enemy. Commonplace objects, like barrels, baskets, etc., were used to convey less ominous intelligence.

Claude Chappe, a French engineer, evolved a dial-system of signaling to be read by a telescope marked by a micrometer. Crossarms were substituted for the dial and would have been immediately successful had not Chappe tried to introduce them in Paris in 1791. Probably there were already too many new ideas in Paris at that period; the seething currents of the Revolution engulfed the new invention. Although the Commune of Paris authorized Chappe to erect stations, the populace feared treachery and, lest the signals be used to communicate with the enemy, burned the stations. Later, however, the inventor's brother was elected to the Assembly and, a test being made in which a message was sent 35 kilometers and acknowledged within 11 minutes, Chappe's system was adopted. Carlyle describes with his characteristic vividness "wooden arms with elbow joints jerking and fugling in the air in the most rapid mysterious fashion"—the system which most nearly did the work of the yet unknown telegraph.

Flag signaling, used since the Middle Ages, has developed a comprehensive code and is still used in the navies of the world. Bugling is another method of signaling, still employed in military operations and effective where the distance is comparatively short.

One great difficulty of all sound signaling thus far has been its short range, and of all optical signals the necessity for clear weather. It was left to electricity to solve these two great difficulties, in the telegraph, which still left unrevealed the greater secret of complete distant communication. But electricity with its undreamed powers was in its infancy when it touched the telegraph to life. The greatness of its hidden might was yet untested.

What then, is the great secret of distant intercourse, which the ages of civilization had been powerless to track to its illusive hiding place? Is not the answer to be found in the nature and purpose of communication itself? The interchange of ideas is the soul of communication. Marvelous as is the development of means of communication and its relation to human progress, it is not the means employed that is essential, but the communication itself. At the Tower of Babel the means of communication were adequate—organs of speech were in perfect order and no distance intervened, but the people were helpless because they could not make one another understand. The bodily presence of two individuals in one place would, therefore, be worth nothing if speech did not permit the interplay of their ideas; it is the coming together of personalities, not corporeal presence, which is essential. The means of intercourse are important simply as they are used and as they develop and stimulate intercourse. The interchange of ideas is itself the educator of mankind, and in so far as historic means of communication have promoted that, they have contributed their great impulse to the increasing fullness of human living. But they have failed to accomplish the full purpose of communication in that they have admitted but a bulky and unsatisfying resource for response. Limitation in the expression of thought, longer or shorter periods of time intervening, withal a somewhat cumbersome means of interchanging thoughts, has characterized each one of them. At no time had any means been devised whereby communication between widely separated points could accomplish the same results as personal intercourse. Messengers, beacons, towers of flame and columns of smoke, carrier pigeons, printed epistles, even telegrams, involved an intermediary, and to that extent their power was insufficient. All were equally powerless to permit discussion, to permit immediate intercourse, the interaction of personalities, the give-and-take of two minds and characters. And this interaction of personalities is the aim, the whole *raison d'être*, of communication.

Abb. 10. Abſenden v. Briefftauben. Holzſchn. a. Montevilla, Reiſe 1488.

Woodcut Showing the Use of Carrier Pigeons—Date 1488

Intercourse over a distance has, therefore, lacked one-half of itself up to the end of the 19th century. But with the perfection of the telephone, long-distance communication came into its own. The telephone provides the perfect means of distant human intercourse by admitting the free interplay of personalities, almost as completely as if no distance intervened. Since the beginning of time the struggle has gone on to convey personality, and never has victory been so complete as it is to-day. Never indeed has the need of victory been so great, for more and more is personality coming to be recognized as a great determining factor in every phase of life. It is the power of personality above all which

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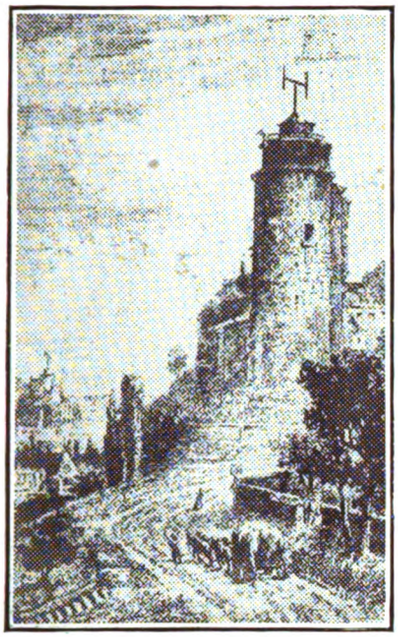
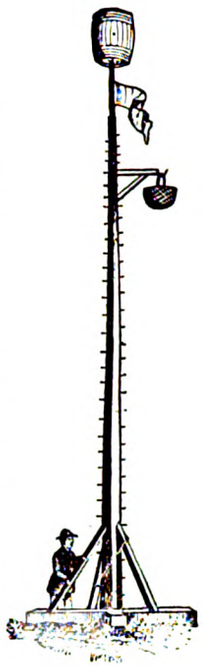


Two Chappe Signal Towers—1791

shapes the individual and the social life to-day. In ancient times it may have been enough that "flaming straightway leapt the courier fire from height to height" to tell that Troy had fallen, but to-day the report would be patently incomplete without a personal interview with the victor! "It is not so much what is said as the person who says it, that makes an impression," observes a distinguished essayist of to-day; and if the impression is to be made at a distance, the telephone alone permits the fullest play of personality. No intermediary dulls the quick effect; no clumsy bulwark of time alters the impression. The personalities are together; the truest, fullest purpose of communication is fulfilled.

The crowning triumph of communication has come with the completion of this great wonder of ages—the slender strand which means the union, at will, of personalities on the Atlantic and on the Pacific seaboards. At a word, a person in New York is in San Francisco. Time and space are as nothing. Sound itself is a tortoise beside the swift currents which bear to the Pacific the voice, the spirit, the emotions, all the infinite and varying qualities which are the man. The intensity of New York, the snow and driving winds outside, are the physical surroundings of the speaker, but he is for a few minutes in San Francisco as completely as if transported thither by Aladdin. The Golden Gate, the riotous profusion of roses, sun-bathed orchard slopes, and the grandeur of the mountains are not more really in the Golden State than is this man who speaks from New York. It is not for these that he has taken the swift transcontinental trip, but the spiritual life, or the business problems of the West, the personal business of his conversational *vis-à-vis*, whatever the object of the communication, it is completely his.



Signal Post Used by the Colonists During the American Revolution

Thus has the age-long problem found fullest revelation. Communication has become another wonder of the world. In a fraction of a second, personality, that substanceless material of the human world, the motif of civilization, spans a continent. The culminating step, thus far, in the progress of communication, this achievement stands, looking forward, and not back. The ages have evolved it; the future alone shall set the limits of its usefulness, shall mold its influence in the onward march of men.

The Montclair "Strollers"

"THE STROLLERS" IN FRONT OF THE WESTERN ELECTRIC BUILDING, NEW YORK

"THE Strollers," an organization connected with Unity Church, Montclair, N. J., visited the Western Electric building, the operators' school and Spring Exchange of the New York Telephone Company, at No. 58 West Houston street, and the Long Distance office of the American Telephone and Telegraph Company, at No. 24 Walker street, on Saturday afternoon, January 30. The party numbered about seventy, under the leadership of the Rev. Edgar S. Wiers, pastor of the church. Luncheon was served at one o'clock by the Western Electric Co., and two auto busses carried the party from place to place and delivered them to the ferry for their train home. Mr. Wiers wrote a letter of appreciation a few days later, in which he spoke of "our wonderful trip of Saturday," and said, "I doubt if one of us will ever forget that afternoon and evening." (It was nearly seven o'clock before the "stroll" was over.)

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EMPLOYEES' BENEFIT FUND COMMITTEE
Left to right: H. F. Thurber, Ford Huntington, J. S. Kennedy (Secretary), F. H. Bethell, (Chairman), J. L. Swayze, J. S. Wiley

Annual Report of the Employees' Benefit Fund Committee

THE Second Annual Report of the Employees' Benefit Fund Committee addressed to employees has been issued. It is as follows:

To Employees

HEREWITH is submitted a report for the year ended December 31, 1914, on the administration of the "Plan for Employees' Pensions, Disability Benefits and Death Benefits" for the New York Telephone Company, the Bell Telephone Company, of Pennsylvania, the Chesapeake and Potomac Telephone Company and their associated companies.

At the end of the year 1914 there was a total of 42,652 employees—18,104 men and 24,548 women. The Plan, during the year, has been a protection to an average number of about 19,378 male employees and 24,405 female employees, or a total of 43,783 employees.

As to Accidents

During the year 2,343 accidents were reported to the committee. The number of serious cases was small. In many cases the employee received "first aid" treatment, but did not lose any time, while in most of the other cases the employee returned to work within a short period.

As to Sickness

During the year 4,290 cases of sickness were reported to the committee. As in the case of accidents, only a very small percentage were of a serious nature.

As to Deaths

For all the companies the total number of deaths occurring during the year was 86.

As to Pensions

During the year 40 men and 11 women were placed on the pension rolls. Thirty-five of those pensioned were employees of the New York Telephone Company, 15 were employees of The Bell Telephone Company of Pennsylvania and associated companies, and 1 was an employee of the Chesapeake and Potomac Telephone Company.

Two pensioners, 1 of the New York Telephone Company and 1 of The Chesapeake and Potomac Telephone Company, died during the year. In both of these cases the pension was continued to a dependent relative of the deceased pensioner for a period of one year.

At the end of the year there were 55 men and 15 women, a total of 70 pensioners on the rolls of the companies.

General

During the year the Plan was revised to provide additional protection to the employees in several ways. The revised Plan was distributed to all employees on May 1.

The total payments under the Plan for the year 1914 amounted to $429,796.

Following are reports of the certificates of audits of the Benefit Funds for the year ended December 31, 1914, which were made in accordance with the requirements of the Plan.

You will note from these reports that the companies have made interest payments and maintained the funds as provided in the Plan.

In submitting this report, the committee wishes to thank the employees for the manner in which they have assisted the committee in carrying on its work.

Respectfully submitted for the committee and by its order.

F. H. BETHELL, *Chairman.*

J. S. KENNEDY, *Secretary,*

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To the Employees' Benefit Fund Committee of the New York Telephone Company

Pursuant to appointment and in accordance with the provisions of the "Plan for Employees' Pensions, Disability Benefits and Death Benefits," adopted by your company, effective January 1, 1913 (and amended May 1, 1914), I have audited the "Employees' Benefit Fund" as established and maintained by your company for the fiscal year ending December 31, 1914.

I find that the amount credited on the company's books to Employees' Benefit Fund on January 1, 1914, was $2,000,000; that there has been added to the fund by additional appropriations during the year $185,804.65 and by interest at 4 per cent. $74,990.18, a total of $260,794.83; that there has been expended during the year for pensions $18,884.23, for accident disability benefits $34,948.45, for sickness disability benefits $147,320.94, for death benefits $43,917.20 and for disability expenses $15,724.01, a total of $260,794.83; that the amount standing to the credit of the Employees' Benefit Fund on the books of the company at the close of business December 31, 1914, was $2,000,000.

I hereby certify that the receipts and disbursements, as above summarized, do, in my judgment, conform to the provisions of the Plan adopted, and that all the disbursements have been authorized by the committee and receipted for by, or on behalf of, the payees.

(Signed) S. A. RICHARDSON,
Traveling Auditor for American Telephone and Telegraph Company.
February 2, 1915.

Telephone Superintendent Arrested as Army Spy

MANY noted celebrities, among them Secretary of the Navy Daniels, Major-General Wood, and ex-Governor Glynn, attended the Centennial Celebration of the Battle of Plattsburg, at Plattsburg, N. Y., last fall.

In addition to the Fifth Infantry which is garrisoned at Plattsburg, two regiments of infantry, one of field artillery, and one of cavalry, took part in the Centennial Celebration and also in the army maneuvers which followed.

Major-General Wood was in charge of the army maneuvers which took place in the Northern Adirondack Mountains and many of the prominent men remained over to witness this very interesting spectacle.

When the day of the maneuvers arrived, each of the regiments, headed by its Colonel, left Plattsburg for an unknown location in the mountains. Scouts from each regiment were left behind to ascertain the direction taken by the opposing regiment and report to their Colonel. Major-General Wood delegated to each regiment one of his staff to act as referee.

Each regiment took up a position in the mountains and scouts crept noiselessly along the mountain passes and trails in an attempt to locate the enemy. If, for example, a certain regiment or one or more companies secured a position whereby it was apparent to the referee that a company or regiment would be annihilated in actual warfare, then the company or regiment holding the strategic position would be awarded a certain number of points. Awards were also registered by the referees for the capture of opposing spies, scouts, etc.

These maneuvers were scheduled to last three weeks and the regiment holding the greatest number of points at the close would be declared the winner of the contest and honored accordingly by the Major-General.

On the second day of the maneuvers, P. J. Reilly, Superintendent of Construction for the Mountain Home Telephone Company, was on his way in an automobile over the mountains from Plattsburg to Malone. He was passing through a very wild stretch of country and mimic warfare was the farthest thing from his mind. A glance along the side of the road a few hundred yards ahead disclosed a number of soldiers, armed to the teeth, approaching on their hands and knees. It was too late to turn back, so Mr. Reilly decided on the spur of the moment to speed up and put possible trouble behind him. The sergeant anticipated his move and in an instant the road was blockaded and Mr. Reilly dragged from his machine.

The sergeant inquired as to his identity and what his business was in that neighborhood. Mr. Reilly replied that he was inspecting telephone lines en route to Malone, whereupon the sergeant ordered him searched. One of the first things taken from his pocket was a topographical map which happened to be the section in which the army maneuvers were taking place. This damaging evidence almost caused Mr. Reilly to be shot on the spot, but thinking that the capture was an important one the sergeant concluded he would have the alleged spy taken before the captain.

The captain criticized the sergeant for suspending hostilities for the capture of an individual, and ordered Reilly to be carried to the top of a nearby bluff and tied to a tree until such time as his case could be further looked into.

From the position which Mr. Reilly occupied, he could see whole companies of artillery galloping through cornfields, tearing down fences, or anything else which blocked their path. He was much horrified to see two army horses plunge into a deep ditch and a hasty examination by the soldiers revealed the fact that the horses were incapacitated from taking further part. Away over on the mountainside a farmer was plowing his field and a detachment of soldiers was detailed to confiscate the horses from the plow.

Following in the wake of the damage done by the soldiers and horses in their hasty rush across the cornfields, a corps of adjusters were taking inventory of the damage and assuring the protesting farmers that the Government would repay them for their loss.

In due time the captain of the company that captured Reilly returned, and while Reilly was still in a daze, several questions were shot at him. "I don't know what the war is about," replied Reilly, "neither do I know who is fighting, but I want to say before I go any further, that I am neutral." The captain, after making sure of Reilly's identity, was careful to explain to him that it was no uncommon thing for the colonel of an opposing regiment to disguise his men as farmers, or equip them with an automobile, in fact, strain every point to gain information that would aid his regiment in winning the contest.

Mr. Reilly found his automobile where he had left it and was soon on his way to Malone convinced that if he had experienced only mimic warfare, the real thing was what Sherman said it was, and then some.

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Annihilating Space

Five Months One Way Reduced to One Second Round Trip, New York to San Francisco

A Prairie Schooner, 1849—New York to San Francisco in Five Months

1849

Hot, radiant, yellow sand, stretching out interminably toward purple mountains. Air, hot as the sands, stifling, muddy with powdery dust. Set squarely in the midst of this vast and lonely wilderness, a drab, cloth-covered prairie schooner crawling, like some immense insect, toward the Land of Gold.

* * *

Five months of longing, hoping, monotonous turning of dry and crusted wheels. The tired little mother with babe in arms pulled back the canvas flaps and looked out. Far, far ahead at the end of the wide trail of sand and bleached bones, lay the great West, as in a mystic dream. Five months—and when the hills, their running streams and low-hanging wet clouds at last came into view, the journey did not seem so long, after all..... only five months from New York to 'Frisco.

Rounding the Horn, 1859—New York to San Francisco in Three Months

1859

Stinging, salt spray blew in the faces of the more sturdy who crowded far forward in the gray of dawn. "Roundin' th' Horn" a deep voice boomed aft from the drifts of mist and fog, and as if to challenge these venturesome ones who had found a shorter route to the Gold Coast, the snarling sea cracked over the creaking decks and the whole little universe of spars and sails and brave masts —and men, ran salty with the sea. Treachery of wind and wave and rocky coast marked these storm-bound miles, but it was worth the dare. "Three months to 'Frisco's opal bay" and the quiet of a prosperous harbor. Whoever heard of such time before? Indeed, man was moving apace. And clipper ships in plenty swung around the Horn, fair weather and foul, vying with each other to shorten this latest travel record.

1869

The musty records of railroading and human progress make almost sacred reference to the first Union Pacific engine that worked its panting, fretful, cindery way over mile upon mile of yellow lands, until it drew its thread of cars up into the mystery of the western hills.

* * *

It was on the lips of everyone in those days—you heard it in Old New York within stone's throw of affable taverns and Bowling Green—you heard it as far across the continent as the Catalinas—"'Frisco in twenty days!" they were saying. The sheer wonder of it! Who could ever have dreamed of such a thing? Man was outstripping himself in his new seven-league boots of steel. And all the while the first brave little Union Pacific engine was whittling fame for itself out of the grim majesty of the Rockies.

1914

We are proud of our Great Achievement; our hands reached out to pat the backs of those mud-spattered men in yellow khaki when they closed the doors of the innumerable little rain-soaked shanties of the tropics upon their blueprints and fever and hopes and disappointments, and called to us that our Panama Canal was ready. Another vista opened up with the rising of another sun—"Sixteen Days to 'Frisco, via the Canal." And a nation—a score of nations stopped their labors for a moment and looked on with respect as Old Glory went rippling up to the top of a gleaming mast and the first steamship eased its way into the chocolate waters of Culebra Cut.

Across the Continent by Rail, 1869—New York to San Francisco in Twenty Days

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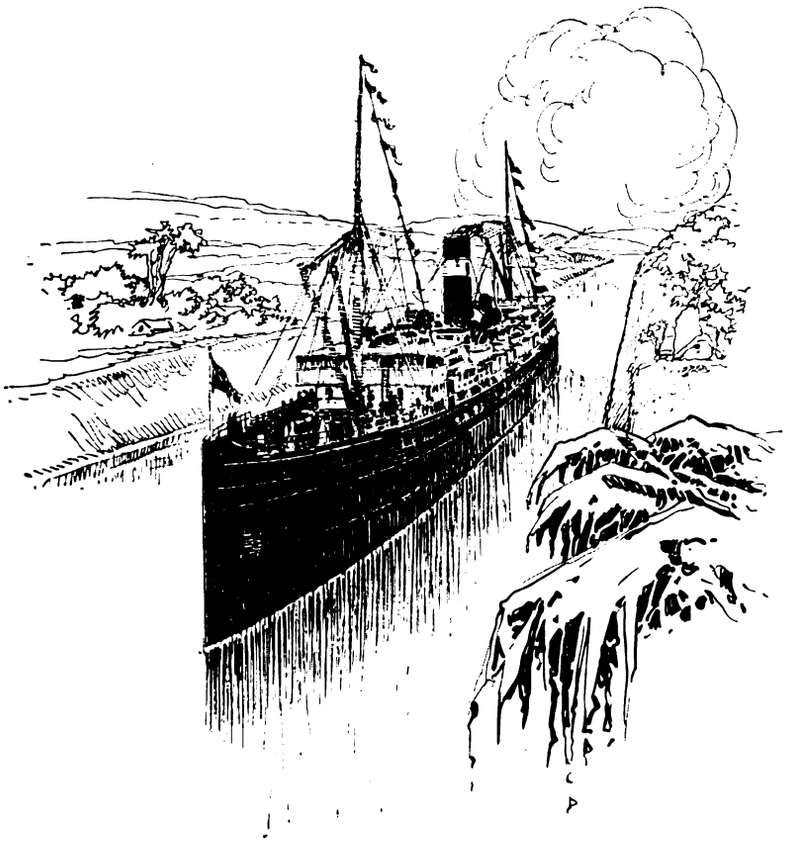


Via the Panama Canal, 1914—New York to San Francisco in Sixteen Days

"Sixteen days from New York to San Francisco." It seemed incredible, and across the broad waters they whispered to each other of wonderful Yankee speed. The shiny, green festoons of foliage, mast high along the Cut, and the queer little thatched houses peered down from the conquered heights of Gatun as the steamer cut a continent in two.

1915

It was on the observation platform of the Overland Limited, bound from New York to 'Frisco. Two men smoked their cigars in silence for some time. Suddenly one of the two spoke: "By Jove, they're getting things down pretty fine when you can get across in four days. Doesn't seem like any distance. Why, it was only yesterday, it seems to me, that they were glad to make it in five months in a prairie schooner, without mishap."

"Yes," the other remarked reflectively, "pretty fast and progressive age—but they've reached their limit. These four days of rail and buffet cars and sleepy porters still separate a business man from lots of opportunity."

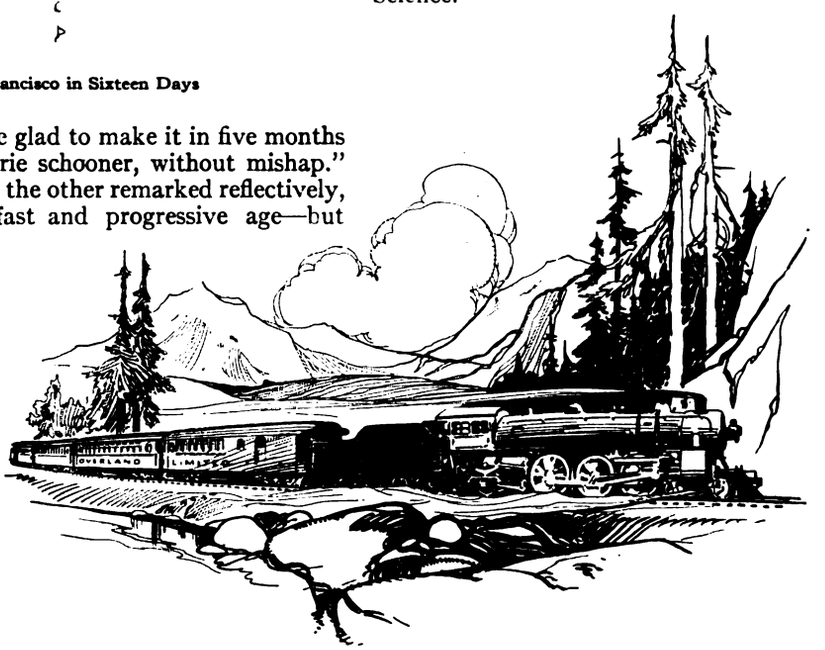
1915

The business man's lament is answered. From New York to San Francisco is now a telephone trip of less than a second. You will soon be able to "call up" the western city from your New York office. "Here's your party," the very pleasant voice of "Long Distance" will say as she opens up for you a pathway of wires straight across the continent—over the mountains and plains, through large cities and modest hamlets—past snow and rain and tropical sunshine. Every wire on this speediest of all speedways tingles with Opportunity.

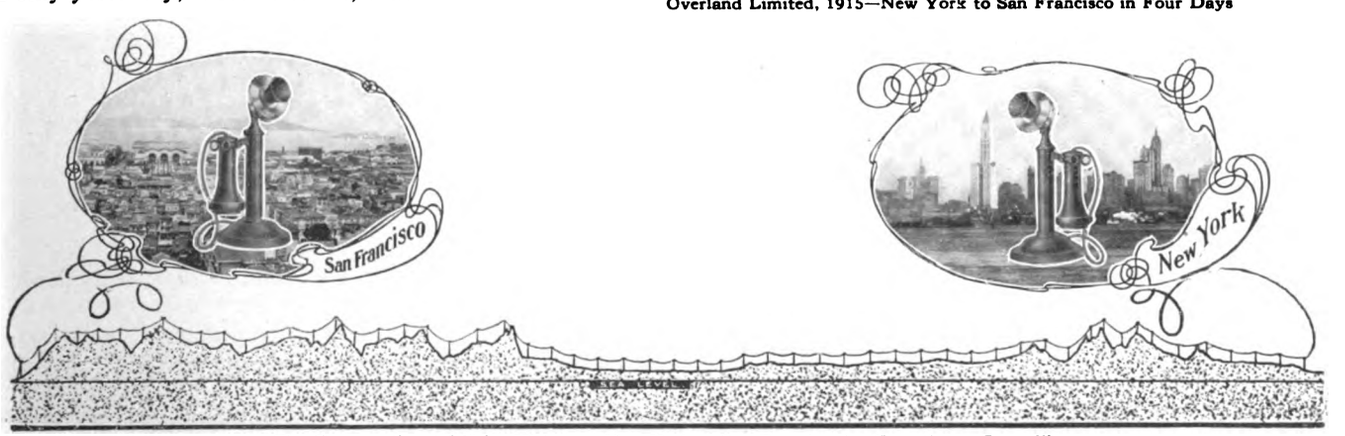
* * *

And the absolutely incongruous part of it is, that your voice will arrive in 'Frisco just three hours before you call up, according to the local time out there on the Coast.

This is in reality "The Triumph of Science."



Overland Limited, 1915—New York to San Francisco in Four Days



The Transcontinental Voice Highway—New York to San Francisco in "Less than a Second"

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1. Restoring a Line Destroyed by the Russians.

5. Germans Placing Telephone Line Through the Argonne Forest.

2. Staff Officers Using the Restored Line to Give Important Orders to the Trenches.

6. Erecting a Temporary Mast for Better Communication.

3. Itinerant Telephone Line Connects with Advanced Post and Headquarters.

4. Division Field Headquarters with Telephone Operators at Work.

How the German Allies Use

Similar Use is Made of the Telephone by All the

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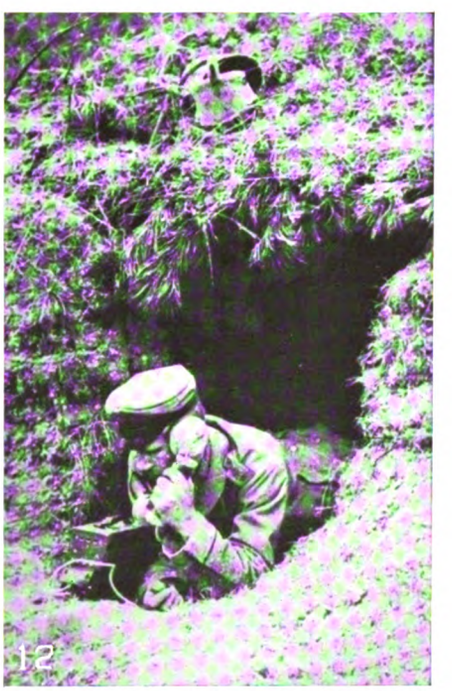
7. Observing the Approach of Russians and Reporting to Field Headquarters.

8. Officers with Field Telephone Ingeniously Concealed in Pit.

9. German Officer Giving to Concealed Operator Result of Observations from Top of Hay Mow.

10. Officer Taking Observations from Elevation in Picture 9.

11. Operators Receiving Information by Telephone for Gunners at Field Battery.



12. Operator Concealed under Hay Mow Transmitting Information from Observer to Gunners or Field Headquarters.

the Telephone in the War

Nations Engaged in the Great European Conflict

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Winning the Coöperation of Subscribers

How Central Office Visits Teach the Public Its Part in the Work of Furnishing Good Telephone Service

THE furnishing of good telephone service depends upon the successful coöperation of three factors —the party calling, the operator and the apparatus, and the party called. For years the Company has been teaching this lesson to the public, realizing that when it is learned improvement in the service results. Once they are shown their responsibility as important parts of the system supplying telephone service, telephone users are quick to do their share.

With the idea of bringing out this lesson more clearly and more forcibly, the plan of inviting the public to visit our central offices was inaugurated some time ago. This plan not only enables subscribers to see for themselves how the apparatus is operated, but also gives them an idea of some of the problems of those who supply the service to an exacting public.

The results of the plan have been very gratifying. The newspapers have commented favorably upon it and many letters have been received from subscribers, thanking the Company for arranging the visits and expressing amazement, admiration and even humility, after the wonders of a central office were shown and explained to them. "Wonderful organization," "wonderful detail and magnitude of the system," "greater patience should be shown by the public," "created a determination to cultivate 'The Voice with the Smile,'" and "I don't think I have spoken a cross word since," are just a few of the expressions contained in the letters of subscribers.

There is no doubt that these visits are giving the public a new conception of the aims of the Company, and are fostering a stronger spirit of coöperation and good will on the part of subscribers.

When the plan was started, employees of the Commercial, Plant and Traffic Departments were trained to explain the workings of the system to visitors in simple, lay terms. An itinerary of the trip through the central office was prepared so as to permit the visitors to follow the course of a telephone message from the time it leaves the subscriber's telephone until conversation begins. The trip starts in the cable vault and then goes to the terminal room, the Wire Chief's desk, power plant (charging and ringing wires), power board, relays, message registers, operating room, sitting room and lecture room.

Trips are arranged for small groups only, so as to prevent overcrowding or confusion in a central office. Better care can thus be given to visitors, and the operators are not distracted or interfered with in their work. Following the inspection, each guest of the Company receives the souvenir booklet, "The Eleventh Hour," which was specially prepared for this purpose. The book describes in story and pictures arranged like "movie" films the operations necessary to furnish telephone service under all conditions.

The following excerpts from letters written to the Company by visitors to our central offices tell their own story:

"The time spent in going over the telephone system and seeing it in operation was a great education to me. Every time I make a call now I feel that I know everything about the intricate process, how carefully and rapidly it is handled by the operators, how the great net of wires and machinery is kept in perfect order for it, etc., etc. I don't think I have spoken in a cross way since that morning."

"I wish to express my thanks for the receipt of the interesting souvenir of my visit, the 'Eleventh Hour' booklet. This is certainly attractively made up and, taken in connection with my visit, will help me to better appreciate what a wonderful organization you have."

"In the 'Eleventh Hour' booklet, it seems to me you have shown in a very complete manner the tremendous equipment needed and the enormous cost of providing the finest telephone service in the world. Anyone receiving this booklet who is not familiar with telephone matters will not only be astonished, but should be very much enlightened on this subject."

"I have read 'The Eleventh Hour' book and found in it many points of interest, notwithstanding the fact that every detail was explained to all members of our party when we visited your exchange."

"'The Eleventh Hour' book is certainly an interesting description of the wonderful detail of the telephone business from the lifting of the receiver to its replacement on the hook."

"You have certainly a wonderful, up-to-date equipment, and your booklet 'The Eleventh Hour' will enable me to be more familiar with the plan design, and perhaps be more sympathetic when minor interruptions occasionally creep into such a complicated system."

"It was a very interesting as well as a 'sightseeing' trip, and I am sure that my visit to your building will result materially, and that any defect in service will receive my forbearance and a generous allowance for the operators when answering the telephone or calling a party."

"One lesson learned after watching your operators work was that greater patience should be shown by the public in general, and I think that such would be the case if it were more generally known how very intricate the telephone system is."

"Your courtesy and patience in devoting so much time recently to giving me such an interesting and instructive insight into the workings of that admirable —— exchange, makes it incumbent upon me even at this late date to formally express to you my appreciation and thanks for that great kindness."

"I am deeply appreciative for being privileged to visit the —— exchange. Not only was it an instructive visit, but of such an impression as to create a determination to cultivate 'The Voice with the Smile.'"

"I was very much impressed by the magnitude of the station and the almost marvelous devices and systems put into operation for conducting this work. It was indeed a revelation to me, the memory of which I shall always carry with me."

Too much credit cannot be given to the representatives of the Commercial, Plant and Traffic Departments for the very efficient manner in which they have carried out their work in connection with the visits of subscribers to the central office.

It is hoped that every employee of the Company will urge his friends to make application to the District or Local Commercial Manager in whose district they are located to have their names put on the list for the next visiting day.

He Would Retaliate

THE following is a very interesting letter from Mr. John A. DeCamp, Superintendent of Schools, Little Falls, N. Y. There are five telephones in the several schools in Little Falls, and the superintendent speaks from personal experience in what he says regarding the service. His defense of the "telephone girl" is frank and enthusiastic. We thank Mr. DeCamp for his letter, on behalf of the entire force of operators.

Mr. W. S. Hall, Local Manager,
New York Telephone Co., Little Falls, N. Y.

MY DEAR MR. HALL:—

I wish to thank you for the January issue of the Telephone Review for 1915 which I received from you to-day. I have had only a few minutes in which to glance at it so far, but I can see that it is going to be very interesting indeed. I thank you most sincerely for giving me this opportunity of learning more about the Bell Telephone.

I also want to take this opportunity to assure you that I have always been very well satisfied with the service and treatment that I have received from the Bell Telephone employees. They have always been very courteous and obliging. Every telephone girl has my sympathy. I think there is no class of people who receive so much uncalled for abuse as they do. There are any number of people who would not speak in a cross or petulant way to anyone face to face, but who will call the daylights out of a telephone girl if they cannot get instant and perfect connection with the man in the moon. All I can say is that if I were a telephone girl there would be a few fuses put out of commission on some people's lines every day.

Gratefully yours,
(Signed) JOHN A. DECAMP.

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Gentleness—An Opportunity

"Gentle in Manner, Firm in Reality."—Aquaviva
"Power Can Do by Gentleness That Which Violence Fails to Accomplish."—Quintilian

"FIRST in war; first in peace; first in the hearts of his countrymen."

From world's end to world's end this ascription is known to apply to but one man, one historic figure, that stands out among all the great commanders, the great statesmen, the people's idols of the centuries—great not only in one or another of these achievements in which other men have gained fame, but great, if not greatest, in all of them—George Washington.

France sent a celebrated artist to Mount Vernon to paint the portrait of the Father of His Country. Week after week the painter seemed to idle time away, while participating in the social life of the retired general and statesman. His host became impatient and wondered when the expected sittings would begin. Suddenly one day the Frenchman rushed excitedly to his easel and began what has become one of the most famous portraits of Washington. He exclaimed as he clapped his heels together in the air, "Now I have him; now I have him; ze General!" Instead of the dignity and repose of domesticity which had characterized Washington's expression during these weeks of idleness, the painter now saw what he had long awaited, the fire and excitement of conflict, which flared up as the General lashed with his riding whip and angrily denounced a man who was beating his horse.

It is also recorded that on another occasion General Washington took off his hat to a colored man who saluted him.

A leader of men in battle and in government, a stern judge and a strong friend, a successful planter, and a courtly gentleman, was George Washington. He combined the extremes of a dominating personality and the gentleness of a child.

Gentleness, therefore, is becoming in the great as well as in the meek and lowly. There is nothing effeminate about it, but it graces its possessor in every walk of life.

Washington was not only an ideal American, but a typical American. It used to be the custom for parents to name their children after him and cultivate in them an emulation of the qualities he so nobly adorned.

Into the warp and woof of Americanism is woven gentleness, and though the generations which have succeeded Washington may have paid more attention to the making of the greatest nation in the world than to emphasizing the outward signs of thoughtfulness and consideration, there has nevertheless been applied to business the principles of good deportment which characterize the home life of the people and of which gentleness is one of the cardinal laws. There is nothing obtrusive, or obsequious, or effusive about our kind of gentleness. Henry Clay said:—

"The courtesies of a small and trivial character are the ones which strike deepest to the grateful and appreciating heart. It is the picayune compliments which are most appreciated; far more than the double ones we sometimes pay." We realize that advancement in life is promoted or obstructed by our bearing toward others, and that "it is not so often the great acts that are treasured and remembered as the petty incivilities, slight neglects, microscopic rudenesses, of which men are guilty without thought or from lack of insight or sympathy."

We are all very much like each other. Gentleness attracts, rudeness repels. It is said that bees will not sting a person whose skin is smeared with honey.

It was but natural, therefore, that there should have been a spontaneous response to the Company's advertisement on "Gentleness" which appeared in the New York and Brooklyn papers the first week in January. It struck a tender chord. There was nothing new about the idea of gentleness—it was the reminder.

H. G. Stokes, Supervisor of Advertising Copy, wrote the advertisement. The publisher of the *New York Commercial* wrote the Company, January 4: "To refrain from congratulating you . . . on the excellence of your copy appearing in our issue of to-day, would cause me to feel myself inconsiderate and consequently deficient in 'the art of gentleness.' Such copy emanating from and bearing the signature of one of America's foremost business organizations sounds a prelude that should crystallize a sometimes neglected sentiment and focus effectively in the minds of men that 'gentleness' is always helpful and never harmful."

The *Wall Street Journal* said:—"It used to be the brutalities of business, the cutthroat competitions, the art of assassinating your rival in his commercial clientele . . . A different spirit permeates business to-day. The definition of 'culture' as 'high breeding and low speaking' obtains. One sees results of these changed conditions in the new business gospel of the New York Telephone Company, which makes Gentleness the watchword of the opening year, in a message spread before the public in the advertising columns of the newspapers.

"The Telephone Company has in this caught the spirit of the American nation, while all the rest of the world is at war. If the French are famous for their politeness, often laughed at by ruder souls, the American people can furnish an example of courtesy as a model to the world. We are still rather raw in some ways. But the law of courtesy prevails. And the Telephone Company has done a public service by calling attention to 'an opportunity.'

"*Tempora mutantur.*"

The Advertising Manager of the *Brooklyn Daily Times* wrote, "We consider it the essence of refinement in good advertising," and many other letters as well as editorial comments have been received from the newspapers.

Even more significant, perhaps, are the many letters which have come from individuals of widely varying interests. A letter was received from Margaret Deland, one of the foremost American authors of to-day, in which she says: "For a great corporation to strike, in the midst of our sordid, hurried life, a note of courtesy and kindness and consideration, is something for which we owe you our thanks. I know that I am only one of thousands of persons who are grateful to you for showing us that business is capable of idealism." From another letter we quote the following, which brings out what is perhaps the most vital truth in the whole situation: "When a large corporation inserts such an advertisement in a newspaper as I lately read in the newspapers, headed 'Gentleness, An Opportunity,' and begs us to be a little kinder in our daily round, it gives us hope that greater justice and mercy are at hand."

That an advertisement can be used as the theme of a sermon speaks louder than words for its influence, not in the business world alone, but in the whole realm of human relationships. Dr. W. P. Merrill, pastor of the Brick (Presbyterian) Church, New York, preached his sermon of January 14 on this advertisement of the New York Telephone Company. Dr. Merrill said in part:

"This tribute to the present social value of gentleness and kindness is all the more significant when we remind ourselves that this great corporation was not spending money so lavishly just in order to preach to the people of New York City. . . It is perfectly clear that the officials of the Telephone Company know that their business will be expedited, that their employees will be kept in better condition, that the work will be done more quickly and satisfactorily, if

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all who use telephones are courteous, kind, and gentle. Those simple qualities have a mighty effect on business efficiency. Realizing what such temper and conduct would mean in their own business, they realized also the difference which would be wrought in general business conditions if such a temper should prevail; and so they paid handsomely for the privilege of preaching peace to the people, inserting this plain but persuasive plea for the art of kindness and gentleness.

"There is a good reason why we, who profess to be Christians, and all who want to do what is right, should give particular heed to the request of the Telephone Company in the single, concrete matter of our use of its facilities. No one can be a frequent user of the telephone without finding ample cause for serious reflection on the lack of courtesy and gentleness which characterizes many who use it. The very impersonality of it is a temptation to lay aside what we ordinarily speak of as 'company manners,' and to speak as one would not dream of doing in the presence of a friend. . . .

"Have you ever, when called to the telephone, heard at first annoyed, impatient, or angry tones, which suddenly changed to the tones of courtesy just as soon as the person at the other end of the wire realized that now he was talking, not to an unknown girl, a part of the telephone system, but to a personal friend? I have sometimes wished I could get the telephone girls to give me their impressions of the families in this congregation. Facts might be revealed which never would come to light in the ordinary relations between people and their minister.

"How many of us, I wonder, would be willing to have our Christian character, judged by so simple and frequent a test as our use of the telephone? Yet our Lord said, 'By thy words shalt thou be justified; and by thy words shalt thou be condemned.'

"It is a little thing; but suppose tomorrow every Christian in this city should play the Christian thoroughly and gladly every time he speaks into a transmitter, revealing in voice and manner the Christ-qualities of kindness, courtesy, gentleness, and good cheer; would not the life of this city be brightened considerably? Would not some hundreds or thousands of young women go home to-morrow night less nervously exhausted by their day's toil? It is the Christian's business to make the life about him run smoothly through a plentiful supply of the oil of joy and gentleness."

Incident of the Transcontinental Line Opening

AN interesting incident of the celebration of the opening of the Transcontinental Telephone Line in New York on January 25, was two cablegrams which passed between Chief Engineers Carty, of the A. T. & T., and Riko of Japan. The messages, which are self-explanatory, read as follows:

NEW YORK, N. Y., January 25, 1915.

Y. Riko, Chief Engineer, Department of Communications, Tokio, Japan.

The telephone line from New York to San Francisco, three thousand four hundred miles long, was dedicated to-day. We were pleased to have at the ceremony in New York Messrs. F. Ono and Y. Yonezawa, engineers of your department. Over this transcontinental line I am telephoning this message to Mr. Thomas A. Watson at San Francisco, who cables it to you as a mark of friendship and good will from the telephone engineers of America to the telephone engineers of Japan.

JOHN J. CARTY.

TOKIO, January 27, 1915.

Mr. Thomas Watson, or in his absence, Mr. McFarland, President Pacific Telephone Co., San Francisco.

Please convey following to Mr. J. J. Carty, New York: Accept my sincere thanks for your cordial message. Am glad to learn that our engineers had honor to be present at the celebration of the successful completion of transcontinental telephone line. On behalf of the Japanese telephone engineers beg offer through you to the American telephone engineers our warmest congratulations for the achievement of such great progress.

Y. RIKO, *Chief Engineer.*

YASUO RIKO
Chief Engineer, Imperial Department of Communications of Japan

Mr. Yasuo Riko, to whom Mr. Carty's cablegram is addressed, is the Chief Engineer of the Imperial Department of Communications of Japan, and in his official position has direction of all the engineering work in connection with the telephone system of the Japanese Empire.

The friendship and association between Japanese and American telephone engineers may be said to have begun with the visit to the United States of Mr. Saitaro Oi, the former Chief Engineer, in 1889, at which time he was entertained by Mr. Carty and was afforded an opportunity to investigate the art of telephony as it had been developed in this country. Mr. Oi paid a second visit to the United States in 1898 and 1899, and many members of his staff have since visited us and made wide use of the facilities afforded them to study the engineering developed in the Bell System.

At the end of thirty-one years of service Mr. Oi retired, and was succeeded, in 1913, by Mr. Riko. Mr. Riko had visited this country in 1901 and at that time made the acquaintance of many of the officials and engineers of the Bell System. Mr. Oi, in 1898, and Mr. Riko, in 1903, became members of the American Institute of Electrical Engineers.

In recognition of Mr. Carty's friendship and services, the Japanese Government in 1903, through Mr. K. Komatsu, then Director General of Posts and Telegraphs, presented to Mr. Carty a beautiful cloisonné vase, and a tablet of Shippo Yaki, and in 1909 the late Emperor of Japan conferred on him the order of the Rising Sun, and in 1912 the order of the Sacred Treasure.

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Early Days In The Telephone Business

By Frank Conway, Assistant Traffic Manager, Morningside Exchange

THIRTY-FIVE years is a long way back in the count of time; when I think of the telephone as it served the public in that day and the great system of the present, I marvel at the revolution effected in the business since I entered it as a boy, thirteen years old, possessed of a large stock of insatiable ambition and conceit. The ambition is still with us, the conceit was rubbed off many years ago.

Richard O'Brien

In the spring of 1879 the telephone was introduced in eastern Pennsylvania by Mr. Richard O'Brien, of the city of Scranton; he is still with us as a "Pioneer," and as a Director in the Bell Co. of Pennsylvania. At the time of which I write he was superintendent for the Western Union Telegraph Co., covering the States of Pennsylvania and New Jersey; also included in his territory was a part of southern and western New York State. Early in the life of the telephone he realized its advantages and possibilities as a means of human intercourse. In short, he was one of those hardy pioneers in the business who had faith in its ultimate good, and the wisdom to "stick." No one can gainsay his wisdom when the prosperous condition of the Bell of Pennsylvania to-day is considered. By myself and the other old chaps who were with him in those days he is and always will be dearly loved.

I Enter the Telephone Business

Toward the closing of the school term in June, 1879, owing to certain mischief resultant from a boyish prank, my dear old mother declared that there would be no vacation for me that summer.

The telephone exchange had just been installed in my home town (Pittston, Pa., a thriving little industrial city of 20,000 inhabitants), and as they were looking for a boy to "man" it, mother applied for me by proxy and I was accepted. The things that happened after that made me forget the great injustice done me by depriving me of my customary two months' vacation and rest from my arduous school work.

Many Skeptics

I recall the interest taken in the wonderful invention by my townspeople. One half of the population came to the exchange in the mornings and the other half in the evenings, to look, listen, and wonder. Many in that army of visitors were of the doubting Thomas kind, wholly skeptical and would not be convinced that the whole "contraption" was not a huge hoax. I remember the peace of the office being disturbed one evening by a rough and tumble fight, the outcome of a heated argument between two male citizens of the town as to whether "that boy Conway" was really talking by wire to someone at a distance or through a hole in the wall and into the ear of his chum Bill. (The same Bill and I were charged with being responsible for many of the hoaxes that were pulled off in the old town.) The one who claimed the latter was the case could not be blamed, for the old Blake transmitter in use at that time did resemble a hole in the wall.

The Whole "Shooting Match"

Service was furnished from 7.00 A.M. to 8.00 P.M. with two intermissions, each of an hour's duration, one for lunch at noonday and the other for dinner at 6.00 P.M. During those two hours we gave no service and would be offended had anyone expected it; the "Exchange" had to eat just like other humans. Again there were times when a line would break down and I had to go out and repair it, the subscribers in the meantime having to whistle for service. The reader will gather from this that I was the whole "shooting match," and I must confess that the reader is not far off the mark. Soliciting, accounting, collecting, repairing and operating all were heaped on my youthful and—permit me to say—willing shoulders.

Finding "Trouble"

The finances of the struggling young company would not permit the employment of much needed help, particularly in that part of the system that is now known as the Plant Department. If a line broke down I had to repair it; if two lines became "crossed" I had to find out where, and then remove the "cross." This was done with the poorest and crudest of tools, often with no tools at all. There were two lines that gave me no end of trouble, one a trunk line to the city of Wilkesbarre, eight miles south of us, and the other a party subscriber line running parallel with it for several miles out in the country. Because of the small amount available for the purchase of poles, it was necessary to be saving of them, with the result that our construction gang in planting poles made the distance between them as great as the strand of wire would permit. It was only natural, therefore, that two parallel lines swinging between poles 300 feet apart would become "crossed" by every strong gust of wind. When this happened I followed the course of the line out of town with a wagon spoke in my hand, and on reaching the point of trouble a well-aimed throw of that wagon spoke knocked out the "cross." Then, walking back to town, I would resume business. At one particular place, about two miles out, this trouble occurred on numerous occasions—in fact, I had to walk out there so many times that the labor involved in carrying that heavy wagon spoke got on my nerves, and one day I conceived the idea of "caching" it nearby so that I could have it on the spot when wanted. The idea worked splendidly until one very warm afternoon when (the usual "cross" occurring) I walked out to the place where I had hidden that useful tool only to find it in the hands of a farmer boy of my own age who lived a short distance down the road. He was amusing himself with it as an improvised baseball bat and batting out "flies" to several of his mates. My demand for the spoke was met with a flat refusal. He found it, therefore it was his property; that was the way he felt about it. I felt differently, and we plainly could not agree, so to the astonishment of his companions, who were good enough not to interfere, we went at it and the punishment we gave to each other was shameful. When the dust settled, I emerged from the fray clutching my beloved wagon spoke in my hand, but I had paid dearly for its possession; every bone in my body was aching and my clothes were hanging from me much torn and soiled. Although one of my eyes was closed I managed after many ineffectual attempts to hit those wires with the spoke and the "cross" came out. I limped back to town covered with pride and bruises, and between calls I patched myself up. I remember that the soulless company never reimbursed me for the fifteen cents with which I bought the court plaster I used in patching myself together. They could not afford it. A friend once suggested that the surplus of the company was spent on the funeral of my antagonist.

Twenty-five Cents for Repairs

We had similar trouble on the trunk lines to Scranton, ten miles to the north, and it came every time the wind blew hard. One morning on opening the office and making the usual test, I found the two Scranton trunks "crossed"; there were but two, and when they became "crossed" our town was isolated. We might have been in China so far as getting into communication with Scranton

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was concerned. I started on my walk in search of the trouble, and on reaching a point about three miles out, I found the two lines badly tangled. Having no wagon spoke with me (that tool was safely hidden on the other side of the town and to the south) I spent an hour throwing sticks, stones, and even tufts of the sod at the wires, but the tangle was too firm, it would not unravel. Finally, I bethought me of a fisherman I had passed sitting on the bank of a stream smoking a pipe and waiting for a "bite." I tramped back and, finding him still there, dickered with him for the loan of his fish pole, a bamboo rod about twenty feet long. He consented to lend it to me for the munificent sum of twenty-five cents. Paying over the amount, I shouldered the pole and walked again to the point of trouble, "poled" out the "cross" and carried the pole back to the owner. That twenty-five cents was returned to me in my pay envelope at the end of the month —you see it was money expended on repairs to company property; the fifteen cents on a previous occasion was expended on repairs to myself.

Our Switchboard

Our switchboard was a wonder; it looked like a cross between an old-time telegraph switchboard and a bread toaster. The "indicators" were a number of ordinary bell boxes of different sizes and were fastened to the wall directly over a Blake transmitter. The tone of each and every bell was exactly alike, and I was in receipt of many complaints for slow answers because of the difficulty I had in finding which bell rang whenever I was called. It was here that my knowledge of "Engineering" stood by me. I procured a supply of bottle corks, or stoppers, tied each to one end of a piece of cord and the other end I fastened to the hammer of the bell. After that it was easy sailing. The ringing of a bell caused the cork pendant from it to swing gently, and a glance along the line of corks showed which line was calling. I was proud of my idea and its successful working, so one day I was much hurt when the superintendent visited the exchange and with a sweep of his hand removed the result of all my patient labor. He did not approve of the plan because those corks looked anything but handsome. The plan brought good results, however, for it was not long afterward that the Company had one of the best boards in use at that time installed. I think it was known as the "Williams" board.

St. Patrick's Day and the First Telephone Girls

We enjoyed a day off on every legal holiday; no one would think of asking for service on such days. The subscribers were very considerate and knew that I earned my holidays. We had Memorial Day, Independence Day, Christmas, New Year's and Washington's Birthday; then along came the 17th of March (St. Patrick's Day). The four boys employed in the Scranton office felt that it was coming to them and I felt the same way; the best reason we all had for expecting that day off was the fact that the name of the president of the Company was "O'Brien." Mr. O'Brien did not look at it in the same light, however, and told us that the 17th was not to be observed as a holiday. In spite of this, when the day arrived, the boys in the Scranton office absented themselves —I did not, owing to a promise of maternal punishment. The result was that those four boys found themselves out of their jobs on the morning of the 18th and their places occupied by four clever young ladies. Right here let me say that if I am not mistaken those four were the first of the feminine gender to operate a telephone switchboard, and I think that the credit for introducing the telephone girl (God bless her) belongs to Mr. O'Brien, of the Bell Co. of Pennsylvania

"Line Is Busy, Call Again"

As I stated before, our trunks to Scranton numbered but two, and on very numerous occasions the subscribers were necessarily delayed on account of both trunks being occupied. The same doubt as to the truthfulness of the "Busy" report was in the mind of the average telephone user of that day that is there to-day, and my report of "Line is busy" was vigorously and vehemently disputed. (Ditto to-day.) A reporter employed on the only newspaper in the town called Scranton frequently in quest of news and my oft repeated "Line is busy, call again," jarred him. One day after giving him the same report about 13 times, I was disgusted to see the following "prayer," written by him, published in that day's issue of his paper:

"Oh, telephone boy, my constant prayer
Is, when you climb the golden stair,
Leading to our Heavenly home,
You'll come across a telephone;
And calling up St. Peter Great,
To beg admittance through the gate,
Back will come that old refrain,
'St. Pete is busy, call again.'"

The Old Town

The old town is much changed since the days of which I write. The population is now double what it was, and they have several newspapers. The town also boasts of an up-to-date and fully equipped telephone building, erected by the Bell Co. In it is the latest type of switchboard, on which they are giving service fully up to the New York standard.

Thirty-five years after those things happened, I find myself dreaming that when I am no longer useful to the great Bell system I may (the pension plan permitting) go back to the old town and live out my remaining years among the scenes of my early "doings."

The Telephone

(Ethel M. Kelley in St. Nicholas.)

Whenever Mother telephones
She talks about a lot of things.
So Father only sits and groans
Whenever anybody rings.
"The season's earlier this year."
"I haven't got my new straw hat."
"I can't because my child is here."
"What did her husband say to that?"

And Father only says, "Hello!"
And takes the 'phone up in his hand.
"Is that you, Harkins? This is Snow.
I wired Chicago. Understand?
I think our man intends to fight,
But we can best him if we try.
You'd better do so, then, tonight.
See you tomorrow. Well, good-by."

And Sister says, "Oh, is that you?"
And then she fixes up her hair,
'S if anybody could see through.
"Oh, I don't know. Oh, I don't care."
"I think I can, if you insist."
"And wasn't yesterday a dream?"
"There's seven on the waiting list."
"I do love strawberry ice cream!"

But what I do is just to say
To Annabel, or Lucy White
"Can you come over here and play?"
And then they answer me: "All right!"
Perhaps when I am really grown—
I'm only seven and a half—
I'll get my friends upon the 'phone,
And talk and talk, and laugh and laugh!

Wire Trouble Men

WHEN the blizzard sweeps across the plain,
Leaving desolation in its train,
When business halts and the wheels are stilled
By the raging storm king, iron willed,
And but few there be who boldly dare
Forth on the snow hidden trails to fare,
And town is isolated from town.
Then the word goes out:—"The wires are down."

The lineman hears, and he understands;
He knows what labor awaits his hands,
And forth he goes, be it day or night,
To face the wrath of the blizzard's might.
For boreal blast he falters not,
Nor tarries to mourn his lineman's lot;
No time for whining at fortune's frown—
There is work to do when the wires are down.

For commerce pauses and traffic waits,
And industry, baffled, hesitates;
And fortunes great may be swept away,
Or futures blasted by brief delay.
The "trouble man" knows; he dare not fail,
And all undaunted he braves the gale
To link together the wires that bind
In friendly commerce the human kind.

And aye wherever the lineman works
With prisoned lightning red danger lurks;
And reaching out for the severed strand
His glove may grasp death's outstretching hand.
Full many a hero has been sung
By epic singers in every tongue;
But let us proffer some small renown
To the man who works when the wires are down.

—*Peoria Journal.*

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Notes on Business Correspondence

WHERE your letter goes, there goes also a part of yourself. How true, but how little recognized in the business world! The thought of a letter is perhaps carefully evolved in the mind of the writer, but does the letter really convey the thought to the reader? Do all the details contribute to the best expression of it?

One of the most deplorable customs prevalent in the writing of business letters to-day is the omission of all forms of expression of the type "Permit me to state," "I beg to remain," etc. A prominent mercantile house has printed at the bottom of its letter heads this sentiment: "We have never heard a good reason for the use of 'Dear Madam,' 'Dear Sir,' 'Yours very truly,' and other similar phrases in business correspondence. For the sake of accuracy, brevity and economy we have discontinued their use." If good reasons for the use of customary forms of courtesy have failed to present themselves, experience will eventually teach the much needed lesson. Circumlocution is to be shunned and honest straight-forwardness to be sought, but neither of these ends is menaced by the use of all courtesy. Courtesy is a sine qua non in business letters, as much as in the use of the telephone or any other mode of intercourse. By avoiding the use of those phrases which put the facts before the reader in a polite manner and show proper consideration for him, the writer lays himself open to severe criticism. Expressions of the type quoted are never objectionable, so long as they are not used to excess, and as a means of showing proper courtesy they are, as a rule, indispensable.

If the rush of business has caused many people to neglect the courtesies of business correspondence, it has at least not deprived them of an appreciation of these courtesies when shown to themselves. Rarely does the politely expressed letter, having the other essentials of effectiveness, fail to "win out" against its curt neighbor in the pile of morning mail.

Although the impersonal tone, or stiff formality, is objectionable in a business letter, the other extreme is even more so. Many books and articles, lately published, advocate directness and the winning of the reader's interest *in the first sentence*, as the chief requisites of the successful business letter. Any such theory of business efficiency is the outgrowth of a fallacy. As a matter of fact the ignoring of courteous forms of expression is likely to *lose*, by the anger or disgust of the reader at the curtness, impertinence, or lack of consideration, more than it ever gains by any supposedly more direct and businesslike or "interesting" opening. Anything in a business letter which may be construed as lack of courtesy must be eliminated. The business world is a human world, and discourtesy places unending obstructions before the wheels of human intercourse.

As telephone people, we have always emphasized the necessity of courtesy in all intercourse. Are we not, perhaps, the ones who can best stand uncompromisingly against the tide which threatens to sweep away the so-called "useless" forms of expression, that are in truth the courtesies of business correspondence?

With courtesy as a foundation, the business letter is capable of almost unlimited variation. No stereotyped rule can be laid down. For instance, a business letter to be telling should be short, as a rule, but circumstances alter cases. Each situation must be met as the multiplicity of circumstances demands and the judgment of the writer determines.

A positive element of personality is of prime importance, for a colorless letter, like a colorless character, can accomplish little. As the strength of a man's personality is felt the moment he enters an office, so should the business letter exert a similar force, whether it be the personality of the writer or of the company for whom he acts. This expression of personality is a question of fine distinctions in the case of the business letter. To make the right distinction the writer must have a complete grasp of the situation and its demands. For example, a clerk, writing in answer to an over-hasty complaint, may feel personally like writing a sharp reply, but if he appreciates the situation, he will express, not his own attitude and personality, but that which characterizes the company for whom he acts.

Some point of common interest, some direct line of personal contact between writer and reader, is another factor necessary to make a letter *live* and exert a real influence. The letter that appeals to the individual needs, convenience, and taste of the reader, that makes him feel you are writing to *him* rather than to an abstract individual with whom you happen to wish to do business—this is the letter which, if courteous in its attitude, will "get over," will accomplish its purpose, will go into the files and not into the waste basket.

Technical details contribute vastly toward the impression given by a letter. A proper proportion should be observed in balancing heading, salutation and date; the top and side margins should be balanced; the general excellence of the stenographic work counts for much; and the accurate folding of the sheet according to the generally accepted usage is important. Innumerable details of this sort have a definite effect upon the general appearance of the letter, and hence upon the impression produced by it. That illusive quality which gives a letter the power to make the desired impression upon its reader, is made up of every material and spiritual detail of the thought and workmanship. One seemingly insignificant matter may mar the whole, and the impression is far more valuable than any amount of time saved by neglect of details.

When the letter is completed, how shall it be addressed? Assuredly, a foolish question, yet how many of us put "City," for instance, instead of the name of the city? Suppose you write from Manhattan and the office boy forgets to mail it until he is half way home in Jersey—his mistake, of course—but if the address had been complete the postal clerk in Jersey City would not have read "City" and the subsequent wanderings would never have commenced.

Numberless considerations, which we have hardly suggested, contribute toward the impression of carelessness or of personal interest which the business letter conveys. Whether the impression will be favorable, clean cut, striking, effective, or whether it will be the reverse, depends upon our courtesy, our exactness in composing, writing and addressing our letters, the thought and consideration we show. Our letters are our representatives in the offices of our correspondents. Shall we permit any but the best to speak for us?

After the completion of the foregoing discussion and just before its publication the following article was received from a stenographer whose observation had moved him to write upon the same subject. Written independently of one another, the two articles present the subject from different angles and will, we hope, be the precursors of a spirited discussion among the readers of THE TELEPHONE REVIEW. As the second article points out, the columns of THE TELEPHONE REVIEW are open for the presentation of various suggestions in regard to this question. It is a subject which merits careful attention, and if many who are engaged in this side of the telephone business will offer their views on this matter it will prove mutually helpful.

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Our contributor presents the following interesting suggestions:

HAVE you ever stopped to consider the value of a neatly typewritten letter? Yes! But have you also considered this from the Company's standpoint? If you have not, and allow your dictation or stenographic work to be such as to give the impression that you consider your letters simply part of the routine of the day, you have not your own best interests at heart much less those of your Company.

A well dictated and carefully typewritten letter stands out clearly before the person who receives it. It not only speaks for the man who dictated it, but it also reflects the ability of his amanuensis. A letter, perfect as to grammar, punctuation and general phraseology, and expressing clearly and concisely the thoughts to be conveyed, is far more pleasing and generally receives quicker consideration than a letter less carefully written. But this is not all. To the public, the man who dictates the letter *is* the company, the public not knowing, and generally not caring, who wrote the letter; therefore, the better a letter is written, the better impression is left with the public, and in this way one less chance is given for possible criticism.

Is the average business letter perfect as to grammar? Is each letter regarded by its writer as one having individuality? Does it express the thought intended, or does it force the recipient to read between the lines? Is the stenographer's work above par? Does it show a gradual development from week to week, in quality and efficiency?

There should be just as much improvement, as time goes on, in the quality and appearance of the letters transcribed by stenographers as there is in the development and production of a higher type of telephone service. No one can stand still. He must either go ahead or go backward. In many cases, if care is not exercised and close supervision made of a stenographer's work, the manuscript will reflect carelessness. If we are not remembering these things, we are not taking the proper pride in our work. Our job requires that we give the best in us. Are we doing that?

And, Stenographers, are we as careful as possible of the neatness and quality of the work we do? The person who dictates may, in following a line of thought, express himself incorrectly while still adhering to the thought he wishes to have conveyed. Do we watch carefully and correct these defects? Do we understand enough of grammar, punctuation, and the general set-up of a letter to be considered a good, first-class or expert stenographer and, therefore, a real help to our superiors? Do we review our work before we transmit it to our superiors for their signatures? It is essential for our personal welfare, and above all for the Company's welfare, that all correspondence receive a certain amount of final proof-reading, so as to eliminate any possible misunderstanding or error. If we do not do these things, we are liable, sooner or later, to criticism.

As stenographers, do we believe there is room for improvement in our own work? Why not make an examination of all the letters we peruse for a period of a month or so? Figuratively speaking, tear them apart. If any questions arise in our mind as to the proper way to punctuate, proper grammatical expressions, etc., let us look them up and then, bringing home the new facts that we have learned, decide if our way is the best. Would we not profit by what we had learned?

The columns of THE TELEPHONE REVIEW are open to everyone for opinions on this subject. Your name need not be published if you do not desire. We want to know your idea of a good stenographer; how a letter should be written; the proper punctuation, grammar, and set-up as you would write it or want it written; in other words, how *you* would address the public. Your opinions may be of value to others and of inestimable help to the Company, in arriving at the acme of perfection in letter-writing.

COMMERCIAL DEPT. STENOGRAPHER.

The Value of a Telephone

From "Breakfast Table Chat," By Edgar A. Guest of Detroit

Last night we had a hurry call to go to daughter May,
Her husband said that ma and me were wanted right away,
An' so, though it was after 12, an' bitter cold outside,
We hustled out of bed an' dressed an' took a trolley ride;
An' Jim—that is her husband—met us with a gracious bow
An' said to me as we stepped in: "Well, you're a grandpa now."

An' ma went flyin' up the stairs, an' Jim an' I stayed down,
An' talked about the great event, Jim in his dressin' gown,
As comfortable as you please. An' then he sorter smiled
An' said: "An hour or two ago I thought that I'd go wild,
The stork was hoverin' above, an' I was all alone.
I'll tell you, Dad, I burned the wires of that old telephone.

"I telephoned the doctor an' I telephoned the nurse,
An' I'm sure the sort of service that I got could not be worse;
I telephoned the druggist, an' I 'phoned the neighbors too,
An' then when I was through with them I telephoned to you.
Each minute seemed an hour to me; I thought they'd never
come.
You bet I was a busy boy, I made the old wires hum."

An' then I laughed an' said to him: "Why, when your wife was born
We didn't have a telephone the neighbors round to warn;
They got me out of bed at 1 A.M. an' said to me:
'You'd better get the doctor now, an' get him here at 3.'
I had to run four miles that night to bang upon his door,
An' then to get the nurse I had to hike about two more.

"That isn't all the hikin' that the women made me do;
I had to get her mother's folks—the same as she made you;
There were no trolley cars back then, at least that late at night;
I ran four stitches in my side, and finished ten pounds light;
I walked an' did a double trot, a gallop and a pace,
An' I didn't even stop to wipe the sweat beads from my face.

"An' here you're in your dressin' gown, an' sittin' by the fire,
An' everybody's on the job, all summoned by the wire.
You haven't even left your house or felt the winter's chill—
Just think, my boy, without a 'phone, why, you'd be running still!
You'd still be hiking somewhere an' wearing out your shoes,
An' pausin' for your second wind—that's how I spread the
news!"

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The TREND of REGULATION

Extension of Facilities

THE Public Utilities Commission of the District of Columbia recently prescribed regulations for the extension of facilities by gas companies, which provide that all extensions of 125 feet or less shall be made by the company at its expense and that extensions of a greater distance to reach an individual applicant shall be made by the company upon a deposit of 75 cents per lineal foot in excess of 125 feet, with the proviso that the deposit will not bear interest but will be returned by the company at the rate of $93.75 (the amount of deposit to cover 125 feet of the extension) for each additional house served from the extension until the entire deposit has been returned. The company is not required to extend its mains in streets that are not at or near the established grade.

The provisions for the connection between the street main and the house of the applicant are that the company shall install a service pipe from the service main to the meter and that the cost shall be equally divided between the company and the applicant, but that the company shall maintain at its own expense the entire service pipe.

Contractual Rights Subject to Change by Commission

THE California Railroad Commission in a recent decision permitted the Half Moon Bay Light & Power Company to increase its rates for service supplied to E. B. & A. L. Stone Company, because it was shown to the satisfaction of the Commission that the utility company had by contract obligated itself to furnish current to the stone company at unremunerative rates and that the granting of too low rates to one consumer imposed a burden upon the utility which must be made up from other consumers.

This case is in line with the decisions of other commissions, which hold that the making of contracts by public utilities with consumers is always subject to the police power of the State.

Restriction of Competition

THE California Railroad Commission on November 23, 1914, refused to grant a certificate of public convenience and necessity to the Valley Telephone Company for the construction and operation of a telephone system within the city of Holtville, California, because no evidence was introduced by the applicant to show that the Imperial Telephone Company, which occupied the territory, was not adequately serving the city, or that its rates were unreasonable.

Zone Charges

THE New Jersey Board of Public Utility Commissioners on the 21st day of December, 1914, dismissed the petition of the Warren Point Association requesting a readjustment of the fare zones of the Public Service Railway Company. It appeared that the granting of the request would probably result in the charge of two fares within the limits of Saddle River Township, which, under the rates established by the company, is embraced in the fare zone that was questioned by the applicants and now permits a passenger to ride from the west to the east boundary thereof for one fare, as is required by the ordinance under which the railway company operates in the township.

The Commission further expressed its reluctance to alter fare zones by quoting from a former decision that "the proper remedy is not one that would savor of favoritism to one particular locality now adversely affected by the zone system, but a reconstruction of the entire system."

For the above reasons and because the granting of the application would mean that a passenger going east from Paterson could get a ride of about a mile longer, while a passenger going west from Hackensack would get a ride of a mile less for 5 cents, the Commission dismissed the petition.

The Maryland Public Service Commission, in the case of Hawley v. City & Suburban Railway Company of Washington, D. C., on December 18, 1914, dismissed the complaint, which included, among other things, a request that the fare zones between Laurel, Maryland, and the boundary of the District of Columbia should be decreased from five to four fare zones, upon the ground that since the Interstate Commerce Commission had already passed upon a similar complaint and had ruled that five fare zones were proper between the boundary of the District of Columbia and Laurel, Maryland, as part of a six fare zone distance from a point within the City of Washington to Laurel, Maryland. The Maryland Commission notices that this case is like the "Shreveport Case," in which the United States Supreme Court decided that the interstate and intrastate transactions of the carrier are so interrelated that the government of one involves the control of the other, and that the Interstate Commerce Commission, and not the state public service commission, is entitled to prescribe the final and determining rule.

The Commission further outlines that if the Maryland Commission ordered the reduction of the fare zones from five to four, the result would be that an interstate passenger would have to pay a higher rate than an intrastate passenger for a like service rendered under substantially the same conditions, which, in the opinion of the Commission, would be improper.

Utility Must Not Discriminate

THE New Jersey Board of Public Utility Commissioners dismissed on December 21, 1914, the petition of the New Jersey Water Service Company for an order to discontinue furnishing water to Ephraim T. Gill at unduly preferential and unjustly discriminatory rates. The Commission took the position that it was the affirmative duty of the water company to discontinue all unduly preferential and unjustly discriminatory contracts without petitioning the Board. This decision clearly sets forth the attitude of the New Jersey Commission that the Utilities Commission Act places the whole responsibility for the continuance of service under unduly preferential or unjustly discriminatory contracts on the utility companies.

Service

"There's no such thing as poor service; if it's not good service, it's no service at all," says Practical Polly of the *Southwestern Telephone News*. She has also decided: "I don't like that 'Service First' idea—it ought to be 'Service First, Last and in Between." Polly has the right idea.

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Main Society

FOUR hundred ninety-two members of The Telephone Society of New York gathered at the United Engineers' Building on the evening of Thursday, January 21, to enjoy the 157th meeting of the Society. Twelve applications for membership had been received since the last meeting and these names having been approved by the Membership Committee, the Society unanimously elected the twelve new members.

After the transaction of business, President Jewett introduced Mr. John L. Swayze, General Attorney of the New York Telephone Company. Mr. Swayze addressed the Society upon the subject: "Regulation of Public Utility Companies by Commissions," giving a most interesting discussion of the advantages and the problems involved. That the germ of ultimate success in harmonizing interests is contained in the present method of regulation by commissions was clearly shown, and the mutual advantages of a system designed to bring to a more perfect consummation this latest step in the evolution of American business.

Mr. Swayze's address was received with the greatest enthusiasm, and brought forth interesting responses from Mr. F. H. Bethell, Vice-President of the New York Telephone Company, Mr. T. P. Sylvan, assistant to the Vice-President, and Mr. D. C. Cox, ex-President of The Telephone Society.

The meeting adjourned to the fifth floor for an hour, where music and cigars and much good fellowship brought the evening to a close.

At the next meeting of the Society, to be held February 16, at the United Engineers' Building, Captain J. B. Adams of the United States Forest Service will give an illustrated address on "The Use of Telephones in the National Forests."

Hudson Section

THE 20th meeting of the Hudson Section was held Thursday evening, January 28, with a large attendance, there being 250 members present from various parts of the Division.

The speaker of the evening was Mr. E. H. Powley, Division Plant Superintendent, who chose for his subject, "Five Years in the Hudson Division." Mr. Powley's paper was very interesting and his analysis of the work accomplished with its relation to the problems of the present and future was clearly stated. He told of the large amount of work done, of the development of a compact organization, how methods had been improved, and how the individual had been educated and increased responsibilities extended further down the line of organization. The fact was also brought out that the Division was emerging from a period of construction and entering an era of maintenance.

Following the close of the paper many instructive remarks were made by Messrs. Jamison, Flanagan, Arland, Hills, Adams, and Greenleaf.

Central Section

TWO meetings of The Telephone Society, Central Section, were held during the month of January—one a meeting of the Utica District at Watertown on Thursday evening, January 14, the other a meeting of the Central Section at Syracuse on January 20.

The Watertown meeting was arranged by a committee composed of Miss Alma Fullerton, Mr. Henry L. Meade and Mr. Charles H. Townsend. The paper read by Mr. J. F. Carroll, Jr., before the Central Section on November 17 was repeated before the Utica District at this meeting. About 200 members were present, and after the enjoyment afforded by the paper of the evening, further entertainment was provided by the following program:

Piano Duet, The Misses Ora Bachmann and Grace Lewis
Vocal Solo.....Miss Mary LaJuett
Accompanist, Miss Theresa LaJuett
The Telephone Way.....Mr. Wm. Ramsey
Piano Solo.....Miss Maude Pooler
Vocal Solo.....Miss Mary Brennan
Accompanist, Miss Maude Pooler
Dance.....Mrs. Ida Gray
Accompanist, Miss Maude Pooler
Piano Solo.....Miss Mary Scarpell
Quartette, The Misses Margaret Bremner, Elizabeth Doyle, Mary Scarpell, Jeanette Snell
Accompanist, Miss Maude Pooler
The Telephone Girl.....Mr. Wm. Ramsey
Dancing.....Everybody

In Syracuse, at the regular meeting of the Central Section, a paper on the subject "Buildings and Supplies" was presented by Mr. H. Van Der Bogart, Supervisor of Buildings and Supplies. Mr. Van Der Bogart's paper was most interesting and brought up many points for discussion, so that for over an hour after the close of the formal paper, various members of the Society engaged in a spirited discussion of the more important questions raised by the address and by the subsequent remarks. This meeting proved to be one of the most interesting held during the entire year.

The Central Section are making plans for their annual dinner to be held on Tuesday evening, February 16, at Syracuse. Tickets are one dollar and can be secured from the Secretary or any of the officers of the Society. From present indications, this dinner will surpass any similar function which has ever been held by the Central Section.

Western Section

THE Western Section of The Telephone Society held its January meetings at Rochester and Buffalo on January 20 and 28, respectively.

At Rochester the meeting was in the form of a "Smoker"; it was well attended, and the evening proved most enjoyable to all. Messrs. H. J. Schroll, R. M. Bruce, H. W. Benedict, A. W. Lawson, Wm. Sullivan, W. B. Smith, B. Shwartz and others read papers or gave talks on various branches of the telephone work, so the meeting afforded much interesting instruction as well as enjoyment.

At Buffalo, Lieutenant C. A. Dravo, of the 29th Infantry, U. S. A. stationed at Fort Niagara, Youngstown, N. Y., gave a very interesting stereopticon lecture on the subject "Field Lines of Information and Signal Corps Work." The lecture was exceptionally interesting in itself and in relation to the present European situation it took on an aspect of added significance. The members of The Telephone Society in the western section were not slow to realize the opportunity offered by this address and the meeting was well attended.

The New Albany Building

The new building of the New York Telephone Company located on State street, Albany, will have as tenants the Comptroller of the State of New York, the State Engineer, the New York State Banking Department and the State Conservation Commission.

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Here and There

Telephones Everywhere and Yet Not One for Him

A curious misunderstanding occurred at Albion, N. Y., where the operating room is located on the ground floor of a building, across the street from the commercial office.

Early in the evening, a short time ago, a man called at the central office and said he wanted to telephone. I explained to him that there were no public telephone facilities in the operating room, and directed him across the street to the nearest public telephone. Just outside of the door the man met a friend, and I overheard them say:

"Wouldn't she let you talk?" "No. She said there was no telephone for me to use, but I saw telephones everywhere. There were about twenty girls in the office and each one had a telephone hanging around her neck. That girl told me a story."

Later, however, the man went to the commercial office, which was open, and talked from the public telephone, with entire satisfaction.

This incident I thought would be of interest as it is indicative of the vague idea a number of people have of a telephone central office.—(Miss) M. MALONEY, *Evening Chief Operator, Albion, N. Y.*

Telephone in Equitable Elevators

A contract has been signed with the Equitable Office Building Corporation for telephone service in the building erected on the site of the old Equitable Building, No. 120 Broadway, New York City. The system when installed will consist of a switchboard, two trunk lines and one hundred and twenty-six extension stations.

The unique feature in connection with this contract is that in each of the forty-eight elevators, which are arranged in groups of eight, there will be an extension telephone station from the private branch exchange switchboard referred to above (and as far as I know this is the first of the large office buildings to be thus equipped) so that regular exchange service is available from each of the elevators.

Having in mind the recent opening of the transcontinental service, one's imagination can easily conceive of some far western banker or politician whiling away a few minutes talking to his home or office in San Francisco, on his way up or down the sky-scraper.

G. G. VOLKMAR, Dey Street.
District Commercial Manager.

Raising Funds

During the past week I was called by a subscriber, a Catholic priest, who stated he had just had wonderful success in collecting $300 by telephone, explaining that he had been able to call a large number of people by telephone and had thus been able to stay in the house during this very bad weather, and solicit subscriptions to a poor fund and church fair.

I thanked him for his commendation of our service, whereupon he came back with a request that I give something. What could I say—but that I would?

R. D. CLEARWATER, *Local Manager, Kingston.*

Sidelights from a Public Telephone Station

An amusing incident emanating from that vantage point for the observation of human nature—the public telephone station, is recounted by A. Fitzpatrick:

I am employed in the Telephone Company as messenger and, while working at the Hall of Records, Brooklyn, I chanced to meet with this peculiar incident, which may add a few smiles to your well circulated journal.

There was a gentleman, seemingly very intelligent, trying to connect with a friend in New York. On depositing the five-cent piece and giving the operator his number, the five-cent piece was returned and the gentleman told to deposit ten cents. He heard the money fall and thought it was on the floor.

Not finding it he called out to me saying, "Hey, son, you had better tell your boss that his slot machine is leaking."

First Aid Lectures Bear Splendid Fruit

George D. Van Aken, Deskman at the Far Rockaway office, was passing an arm of Jamaica Bay at Far Rockaway, on January 4, when he heard boys calling for help. He learned that a boy had fallen through the ice one-quarter of a mile away and about two hundred feet from shore.

Without removing even his coat, he started out on the ice which he knew could not hold his weight. After falling through once and dragging himself and another boy out of the water, he again started toward the hole where the first boy had disappeared and succeeded in reaching it by crawling flat on the ice. The ice gave way when he reached the boy and he went into water about thirty feet deep. Grasping the boy, who had become unconscious, he placed him on the ice. It broke again under the weight. After securing hold of the boy for the second time, Mr. Van Aken managed to hold on to a large piece of floating ice until the people on shore threw a rope and dragged him and the boy to shore.

After bringing the boy to shore Mr. Van Aken, having attended Dr. Shield's lectures, applied "First Aid Treatment," and brought the boy's breathing back in twenty minutes. The boy was ten years of age.

The *Rockaway Journal* says in describing the incident:

While Mr. Van Aken was applying his first aid methods, instruction in which is given to all Telephone Company employees, people from the vicinity got blankets and wrapped about him. He went to his home and took precautions to prevent any ill effects from his icy bath, but he says that it was twenty-four hours before he got warm again.

Another Use for the Telephone Directory

A member of the Plant Department tells of another addition to the ever-increasing sphere of usefulness of the telephone directory. He says that several days ago an agent called at his home soliciting orders for a "large House which was going to open a local branch." According to the agent this "House" had been established for "years" and had some fifteen branches in New York City alone.

"My wife having heard that story before," writes our contributor, "decided to try a new way to hasten Mr. Agent along, so she told him that if his company was as large as he represented it, it would be listed in the telephone directory and she would look it up."

Needless to say no such company was listed, nor did Mr. Agent wait to hear the result of the investigation.

Telaudit Club

The annual meeting of the Telaudit Club was held January 4, Room 704, 25 Dey Street. The following officers were elected for the ensuing year: F. C. Salisbury, President, H. Richard, Vice-President, O. Ranzweiler, Secretary, E. T. Bryant, Treasurer.

After the business meeting the club adjourned to Cavanaugh's Restaurant, where the annual dinner was held, the president acting as toastmaster.

Apt remarks were made by Messrs. Devereux, Marriott, Newton, Morgan, and Saxton relating to the progress made by the Accounting Department during the past year.

Place cards were novelty souvenirs designed by R. L. Bodine of the Accounting Department.

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Starting Repairs

Surveying the Wreck

OUTSIDE CABLE DAMAGED BY A FIRE, PLEASANTVILLE, N. Y.

Making a Splice

Quick Work in Cable Repairing

The burning of a road house just south of Pleasantville, N. Y., put a 250-pair toll cable completely out of commission. One of the poles was burned through, permitting the cable to drop within two feet of the ground. Forty trunk lines, eighty-nine subscriber lines, and ninety-eight stations were out of service. This is the main toll cable for the Mt. Kisco section, carrying Westchester toll circuits, local toll circuits, and subscriber lines.

News of the fire reached the Plant Department at Mt. Kisco about 10:30 A. M., and in a short time two gangs were on the scene with two Ford cars and an auto truck. Although there was considerable preliminary work necessary, including the replacing of several forty-five-foot poles, the actual work of restoring service on the subscriber lines and toll circuits was started at 1 P. M. Temporary service on the toll circuits was supplied by the use of a section of 50-pair cable from the storeroom at Mt. Kisco. It was necessary to secure the cable required for permanent repairs from Tremont, and this was rushed to the scene of action by auto truck, arriving at 4 P. M.

At 6 P. M. all subscriber lines and toll circuits were O. K., no complaint having been received from a single subscriber, many not even knowing that their service had been interrupted.

A week later another building was destroyed by fire, once more burning our cable through. The work of restoration was repeated in record time.—R. STOCKWELL, *Local Commercial Manager, Mt. Kisco, N. Y.*

Our Operators

"The season's greetings, true and sincere!"
Uttered afar—who brings them near,
To gladden the heart and fill it with cheer?
Our operators!

J. CLARKE,
Real Estate Dept., N. J. Division.

Jack Frost's Caprice in New Jersey

While the storm of December 6 to 9, inclusive, prevailed generally throughout the New Jersey Division, heavy deposits of ice, such as those shown in the accompanying views, occurred in but two rather limited sections of territory, one bounded by the towns of South Orange and West Orange on the east, and Florham Park and Livingston, N. J., on the west, and the other and larger in the general vicinity of Dover, N. J.

This peculiarity of the storm was very fortunate for the New Jersey Division, for had ice been as heavily deposited on wires over the entire Division, as in these two districts, conditions would undoubtedly have been more serious than after the storm of March 1, 1914.

CHESTER N. WEEMS,
Division Equipment Engineer.

Saving a Switchboard From Flood

At the height of the storm on December 7, the public telephone switchboard in the Erie Station at Jersey City was in danger of being water soaked by the excessive tide-water, which stood twelve inches deep in the waiting room. The danger had hardly become apparent, however, when a P. B. X. inspector and two linemen were on the job. Fitted with rubber boots, they raised the switchboard about eighteen inches on a temporary cribwork, so when the storm subsided a few hours later, the public telephone attendant could transact his unusually brisk business.

It was the prompt action of the Plant employees which saved the switchboard and associated apparatus and prevented a serious interruption of service at a time when the benefits of such a service were being clearly demonstrated.

A. J. DONOHUE,
Wire Chief, Jersey City District.

Appreciation

A pathetic little playlet in real life was enacted in my presence during excitement following a recent subway accident, proving how absolutely and immediately the telephone becomes the medium by which our fears are allayed and our very happiness restored.

I was talking to a local hardware dealer in his store in Brooklyn immediately after the electrical explosion occurred in the Manhattan tube, when the telephone bell rang and on answering the call, the dealer was earnestly requested by a very anxious young man to send a message to his home to inform his widowed mother that he had luckily escaped harm and was perfectly safe and well at his office. The mother had heard of the accident and was almost frantic with fear when the messenger arrived. She was not satisfied with the report but wished to hear her son's voice. Rushing hatless to the store, she seized the telephone and cried—"John, are you there?" Her son, who had held the wire, easily satisfied her that it was he and no other. In her great joy, she exclaimed "Thank God and the man who made the telephone," and covered the telephone with kisses.

E. J. SADDINGTON, Flatbush, L. I.
Commercial.

Fine Service Record of Long Island Plant Department

During the year 1914 the following employees of the Plant Department, Long Island Division, retired on pension:

Joseph LeMarsh, Pole Line Department.

William McGrath, Pole Line Department.

Manuello Spinella, Subway Department.

Louis Holm, Subway Department.

There are eighteen employees in the

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Plant Department who have each passed the one-quarter century mark in the service of the company.

Name.	Title.	Years of Service.
U. S. G. Bishop,	Foreman, Inst. Installers..	36
W. R. Bowman,	Chief Foreman Inst. Installers	32
W. A. Ford,	Special Agt. in Charge R/W...	30
T. Fitzpatrick,	Superv. Foreman Pole Line.	31
A. Ficarra,	Foreman of Laborers.....	28
V. Guirevich,	Foreman, Pole Yard.....	27
A. Johnson,	Subway Inspector.....	27
J. F. Moody,	Foreman of Testers.....	25
R. Moody,	Foreman of Inspectors.....	26
J. McDonough,	Line Foreman.....	29
J. C. Peaty,	Line Foreman.....	32
J. L. Pitcher,	Wire Chief.....	29
J. Rourke,	Pole Line Expert.....	33
J. A. Shaw,	Chf. Foreman Inst. Installers..	27
S. D. Snook,	Senior Right of Way Agent...	35
F. Spinella,	Subway Foreman.....	27
F. W. White,	Equipment Engineer.....	28
J. A. Wyatt,	District Supervisor.....	27

An interesting feature of the list is that all of the employees in the service over twenty-five years are now occupying responsible and valued positions. They are as active and enthusiastic in their work to-day as at any time during their employment.

Bryant Exchange

On the opening of the Central Complaint Bureau at Bryant, July, 1913, the men selected to handle the business created there were recruited from the Evening Managers then located at the various Manhattan central offices.

This force, consisting of six men, has given the Company a total of one hundred and thirty-two years' service. The men have passed through the different methods of operating and the constructive changes in the various telephonic switching systems from the crude state in the days of the Law Company at 140 Fulton street up to the present day system. They have gained in experience and knowledge through the fulfilling of the duties required in the positions of messenger switchman, "A," "B," Toll and Recorder operators, students, traffic inspectors, night and evening managers.

Of this force four are members of The Pioneers of America, namely, Messrs. Saunders, Kelly, Hoffman and Quinn.

O. S. C. Aymar was engaged September 5, 1896, as a night operator, and was later assigned to the Harlem office. About four years later he was transferred to Riverside and Morningside exchanges as night manager; transferred to Spring central office and title changed to Evening Manager, June 19, 1911; July 21, Complaint Desk.—Eighteen years in the service.

Geo. W. Hoffman entered the telephone field July 4, 1892, as a night operator in the New Rochelle central office, and in the year of 1895 was transferred to the Metropolitan District, as a night operator in the Cortlandt central office. In 1903 he was appointed night manager of the 79th Street central office, and in 1906 as evening manager of the Lenox central office. At the opening of the Evening Manager's Central Complaint Bureau in 1913 he was made Evening Assistant Traffic Manager.—Twenty-two years in the service.

P. J. Kelly recently completed his twenty-seventh year of service with this Company. He started his duties as a "Slip-passer" in the days of the Metropolitan Company at 198 Broadway, on October 1, 1887.

At the time of the opening of the Cortlandt central office at No. 18 Cortlandt street, he was transferred to the old Spring central office, Broadway and Spring street, as a switchman. Later he was appointed night manager of the Harlem central office, and in July, 1913, was transferred to Bryant Central Complaint Bureau, as Evening Assistant Traffic Manager.

Joseph Quinn's employment dates back to January 15, 1894, when he started as a messenger boy in the Broad central office; later having experience in the capacity of switchman, night operator, night manager and evening manager. His present position is that of Evening Assistant Traffic Manager at the Bryant Central Complaint Bureau. —Twenty years in the service.

Walter R. Saunders, Evening Traffic Manager, Bryant, will complete his twenty-seventh year in the Traffic Department on April 15, 1915.

Caledonia Fire

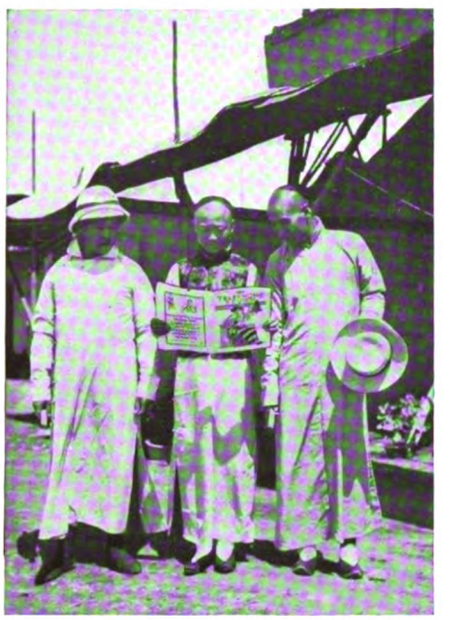
About 4.45 A.M. on January 14, 1915, I was awakened by inhaling smoke and hearing the noise of burning timber. Looking out of my window, I discovered that the building adjacent to the block in which our Caledonia central office is located was on fire. I immediately turned the fire alarm switch, which rings a bell at the Four Corners, but I knew that owing to the early hour there would be few people on the street, so I called nearby subscribers. It seemed as though they would never answer, so I sent my sister to arouse the family occupying the apartment next to our quarters. They rang the town fire bell and in a short time firemen were fighting the flames.

The fire was extinguished in about one hour and a half, but the building was a complete wreck.

After looking back and thinking of the danger which our office was in (for it was possible to step from the operating room window onto the roof of the burning building) I feel that we were extremely fortunate in not having any damage done to our office or equipment.

It is in such a case of emergency that one appreciates encouragement, which was so opportunely given by the Supervising Chief Operator at Le Roy and the District Traffic Chief's office at Rochester.

J. ABBOTT, *Operating Agent, Caledonia.*



THREE HELLO CELESTIALS

Telephone officials in China reading The Telephone Review just arrived

A Telephone Sundae

Surely the realm of the telephone is unbounded and its fame stops not at any limits. Miss E. Potter, Chief Operator at Poughkeepsie, tells a story of a new sphere in which the telephone name is being utilized. A widely known manufacturer of cough drops runs a restaurant and soda fountain in Poughkeepsie, N. Y. In connection with his nation-wide business, he recently installed a private branch exchange system having four trunk lines and twenty extensions. His P. B. X. operators were instructed by Miss Margaret Burr, a supervisor at the Poughkeepsie exchange, who made a valuable suggestion to the proprietor, for the local branch of his business. At the soda fountain the local institutions of learning, such as Glen Eden and Riverview, and also Vassar College, are immortalized by various dainty concoctions with such tempting names as "Glen Eden Delight," "Riverview Sundae," etc. Why not institutions of service as well? Miss Burr suggested a "Telephone Sundae," and an attractive poster soon appeared, bearing the far-famed Blue Bell, several feet of twisted pair and an instrument, with an alluring legend describing the delights of a "Telephone Sundae."

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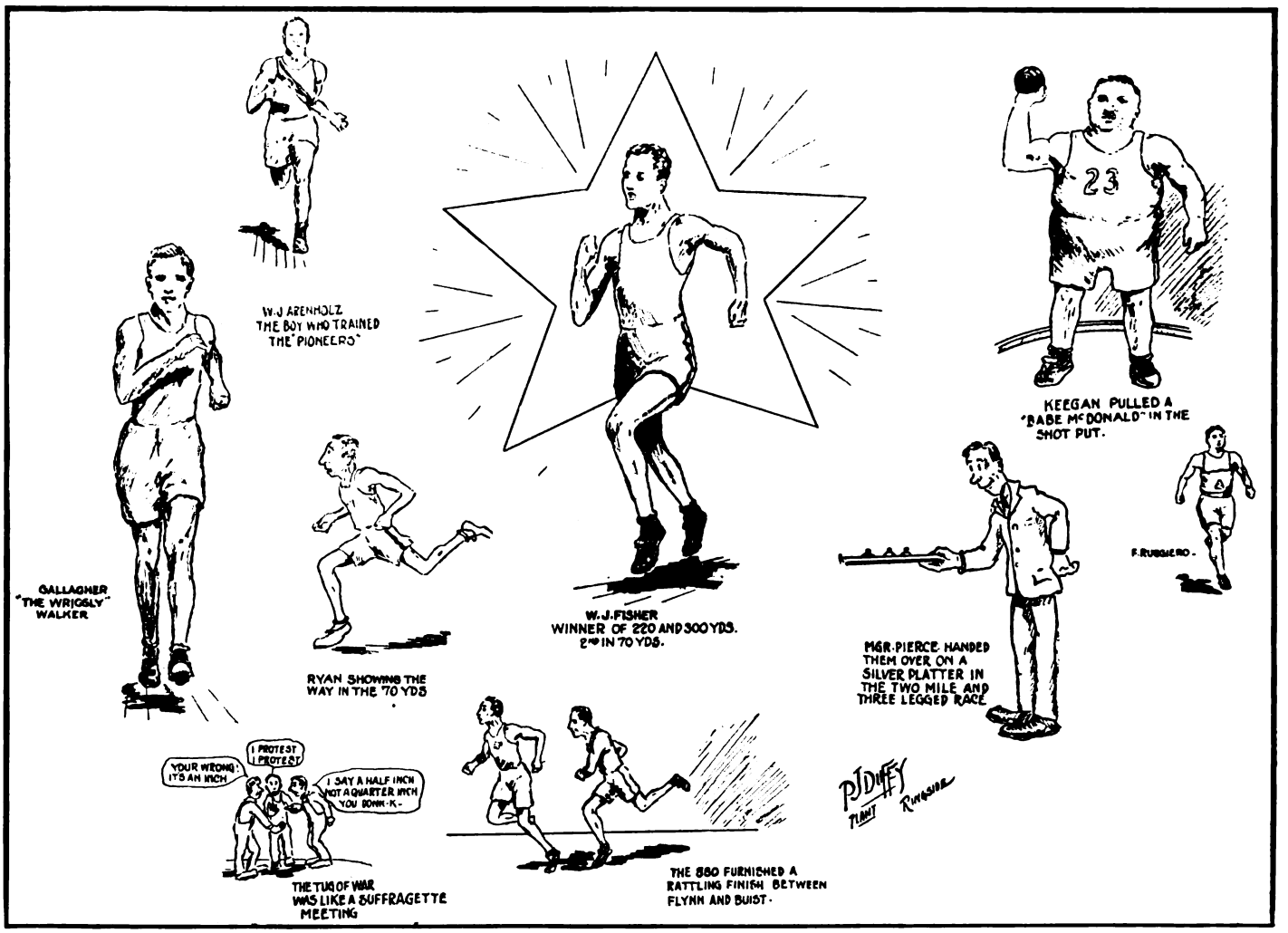
Athletics

EMPLOYEES ARE INVITED TO SEND IN ACCOUNTS OF ALL ATHLETIC GAMES AND MEETS IN WHICH THEY PARTICIPATE, TOGETHER WITH PHOTOGRAPHS, IN ORDER THAT OUR REPORTS OF SUCH ACTIVITIES MAY BE MORE COMPLETE



Indoor Meet of the Telephone Club

ONE of the best and most successful athletic meets ever conducted in New York City was held under the auspices of the Telephone Club for the employees of the New York Telephone Company at the Seventy-first Regiment Armory on the evening of January 15.

The meet attracted one of the largest and most interested groups of spectators that have attended a set of games this season. The crowd numbered about four thousand, composed entirely of Company employees and their friends.

The Track Committee received 780 entries from 388 employees, about 250 of whom took active part in the games. The largest number of individual entries was 127 in the tug-of-war followed by 91 in the 70-yard dash, and 83 in the three-legged race. The smallest number of entries was 32 in the 220-yard race, open only to members of the Telephone Club. The Souvenir Program required twenty closely printed pages to print all names and events.

Some of the most prominent athletes in the Metropolitan District are employees of our Company. The competition was so keen and some of the finishes so close that had the judges been less competent they would have had difficulty in placing the order of finish of the contestants.

Great praise is due the officials who ran off the events with clocklike precision and for the skillful manner in which the large crowd was handled. This was the second set of games conducted by the Telephone Club, and from every standpoint it not only equaled but far surpassed the meet at Celtic Park last July.

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Prizes of value were awarded in all events. In the individual events gold Waltham watches were given for first prize, gold watches, Swiss movement, for second prize, and gold medals for third prize. In the team events, handsome gold Swiss watches were awarded to each member of the winning teams and gold medals were awarded to each member of the teams finishing second.

One of the novel features of the games was the special restriction as to the awarding of prizes. No competitor in the individual events was allowed to accept more than one prize, therefore in some of the events men who finished fourth and even fifth were awarded a prize.

While there was a restriction as to the winning of prizes in the individual events, a beautiful bronze statue of Mercury, thirty-two inches high, representing the individual championship at the games, was presented to the athlete who scored the greatest number of points in the individual events. Points were awarded to first, second, and third places in each of these events.

W. J. Fisher, of the Commercial Department, Long Island, was easily the star of the evening, scoring 13 points, thereby winning the coveted championship trophy. He finished second in the 70-yard dash, won the 300-yard run and the 220-yard dash, which event was open only to members of the Telephone Club.

F. P. Flynn, of the Buildings and Supplies Department, was second with 8 points, and A. McDougal, of the Plant Department, Manhattan, was third, with 6 points.

The first event, the 70-yard dash, started promptly at 8 P.M. The final heat brought together Jas. F. Ryan, of the Buildings and Supplies Department; W. J. Fisher, of the Long Island Commercial, champion sprinter and holder of several A. A. U. championship titles, who represents the Irish-American Athletic Club in open A. A. U. competition; Edward L. Emes, of the Accounting Department, who is also an A. A. U. champion and titleholder, and who represents the Bronx Church House in open competition. This event furnished the first surprise of the evening. The race had been conceded to Fisher, but by an almost superhuman effort Ryan broke the worsted ahead of his rival. Emes finished third.

The half-mile run was the next event, in which a new champion was heralded. F. P. Flynn, of the Buildings and Supplies Department, who represents the Knights of St. Anthony in open competition, won this event from R. Buist, of the Plant Department, the winner of the championship in this event at our outdoor games at Celtic Park last July.

The final heat in the three-legged race brought together former champions and rivals, representing the Plant Department in different divisions. George Casey and W. J. Ahrenholz, of the Plant Department, Manhattan, were winners by a scant margin. W. F. Lynch and C. J. Brady, of the Plant Department, New Jersey, finished second.

The three-quarter mile walk kept the spectators in a roar of laughter right from the beginning of the event. This was one of the most amusing events on the program. John Gallagher of the Plant Department, Manhattan, won easily.

C. W. Keegan, of the Traffic Department, Long Island Division, recordholder and present military athletic league champion in the shot-putting event, again showed his superiority by hurling the missile 46 feet 7¾ inches.

Frank Ruggiero, of the Plant Department, who was a member of the Olympic Team, 1912, representing the Bronx Church House, won the two-mile run in easy fashion, retaining his title of champion won last summer.

W. J. Fisher, of the Commercial Department, Long Island, finished up a very successful evening by romping away with first place in the 220-yard run.

The spectators took great delight in the tumbles made by the competitors in the sack race, which was finally won by A. R. Greene, of the Commercial Department, Manhattan, who was able to keep his balance and stay on his feet until the finish line was reached. E. W. Sigler, of the Plant Accounting Department, who won last year's title in this event, finished second.

An event which attracted the attention of a great many people was the hand line contest for accuracy. A wire ring about thirty inches in diameter was raised to a point thirty-eight feet from the floor. The contestants were required to throw a rope or hand line through this ring. The most perfect throws were made by Joseph Lewis, Plant Department, Long Island. and he was awarded first prize, having thrown the rope through the ring on every trial.

The tug-of-war event furnished some of the best competition of the evening. Fourteen teams reported to the Clerk of Course, and the finals brought together a team representing the Plant Department, Long Island, and a team representing the Plant Department, New Jersey, Paterson District. After several trials of five minutes' duration the judges were unable to declare the winner. The same condition existed in the competition for third place; therefore teams representing the Buildings and Supplies Department and a team representing the New Jersey Plant, Passaic District, were tied, the judges being unable to decide which team was best.

Mr. Andrew Geldol, who was anchor on the Long Island team, acted as anchor on the Swedish team which won the tug-of-war championship at the last Olympic Games in Stockholm.

Long Island Plant (Brooklyn Team)	New Jersey Plant (Paterson Team)
Chas. Abrahamsen	Paul Tilman
Jos. Schultz	Michael Comerford
Nicholas Hansen	Patrick Quinn
Jacob Arveson	Jos. Ryan
Andrew Geldol	Ronald McDonald

Tied for Third Place

Buildings and Supplies (Manhattan Team)	New Jersey Plant (Passaic Team)
P. Keena	Arthur Castiline
B. Shaw	Wm. Mead
J. Walsh	Jas. Chapman
T. O'Shea	Jacob DeYoung
C. Simonson	Floyd Crater

The closing event on the program was the interdepartmental relay. Ten teams faced the starter, each team representing a different department. During the first relay the Buildings and Supplies team opened up a big gap on the field—with the Plant Department, Manhattan, in second place. During the second relay the teams were brought closer together, and at the finish of the third relay teams representing the Buildings and Supplies Department, Plant Department, and Traffic Department were on even terms. During the last relay the Plant Department, Manhattan, forged ahead and was an easy winner. The Buildings and Supplies team was second—five yards in front of the team representing the Traffic Department.

The summaries follow:

70-yard dash—won by James F. Ryan, Manhattan Buildings; W. J. Fisher, Long Island Commercial, second: E. L. Emes, Manhattan Accounting, third. Time, 8 seconds.

880-yard run—won by F. P. Flynn, Manhattan Buildings; R. Buist, Manhattan Plant, second; F. Capelli, Manhattan Plant, third. Time, 2 minutes 8 3/5 seconds.

70-yard three-legged race—won by George Casey and W. J. Ahrenholz, Manhattan Construction; William T. Lynch and Charles J. Brady, New Jersey Plant, second; F. S. Patterson and John Batcher, Long Island Plant, third. Time, 8 4/5 seconds.

Three-quarter mile walk—won by John Gallagher, Manhattan Plant; William Harvey, Jr., Subway Construction, second; W. Sullivan, Manhattan Plant, third. Time, 6 minutes 5 seconds.

300-yard run—won by William J. Fisher, Long Island Commercial; Harry J. Edwards, Manhattan Plant, second; John H. Aschoff, Manhattan Engineering, third. Time, 36 seconds.

Putting 12-pound shot—won by C. W. Keegan, Long Island Traffic, with 46 feet 7¾ inches; A. McDougal, Manhattan Plant, second, with 43 feet 6 inches; Joseph Lewis, Long Island Plant, third, with 40 feet 10½ inches.

220-yard run—won by W. J. Fisher, Long Island Commercial; F. P. Flynn, Manhattan Buildings, second; W. J. Ahrenholz, Manhattan Construction, third. Time, 25 seconds.

Two-mile run—won by Frank Ruggiero, Manhattan Plant; Charles T. Arthur, Manhattan Directory, second; F. J. Kelly, Manhattan Construction, third. Time, 10 minutes 20 4/5 seconds.

Running high jump—won by Joseph A. Johannes, Manhattan Plant, with 5 feet 5 inches; F. J. Bangham, New Jersey Plant, second, with 5 feet 4 inches; W. F. Carroll, Jr., Manhattan Plant, third, with 5 feet 3 inches.

Hand line contest—won by Jos. Lewis, Long Island Plant; A. McDougal, Manhattan Plant, second; J. Maguire, Long Island Plant, third.

One-mile interdepartmental relay—won by

Plant Department	Buildings Department (Second)	Traffic Department (Third)
R. Buist	R. E. Lewis	P. N. Edwards
W. Wagner	J. A. Ryan	J. VanWagner
H. Edwards	R. Leyman	R. D. Donaldson
J. Richmond	F. P. Flynn	J. G. Lapham
W. Ahrenholz	A. Rosener	T. P. Kearney

Time, 3 minutes 40 2/5 seconds.

The last event on the program was finished at 10.30 P.M. For the remainder of the evening Eben's celebrated Seventy-first Regiment Band furnished excellent music for the dancing. Refreshments were served by the regimental armorers.

Mr. G. L. Yates, chairman of the Track Committee, stated that seldom, if ever, has New York City seen a better conducted set of games or a finer appearing body of spectators. He attributed the success of the Track Committee, first, to the splendid machinery available in the organization of the company; second, to the personal efforts of Secretary A. G. Salmon and the other members of the Track Committee, and third, to the Games' Officials, Entertainment Committee, president of the Telephone Club, and last, but not least, to forty-seven men engaged in the advance sale of tickets.

Dey Street Bowling Contest

A HANDICAP bowling match was rolled December 17 between the District and Local Commercial Managers of the Dey street district and a picked team from the Dey street local office, resulting in a victory for the Dey street local office boys. The challenge to roll the match was issued by the Dey street local office team and was promptly accepted by the

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district and local managers with the understanding that they would be granted a suitable handicap. The scores were as follows:

	District and Local Managers Total Pins	Total with Handicap	Dey Street Total Pins
1st game	539	714	752
2nd game	686	861	800
3rd game	554	729	855
Total pins 3 games	1,779	2,304	2,407

Difference plus 103.

New Jersey Bowling Match

A THREE-GAME bowling match between the Traffic and Plant Departments of the New Jersey Division, was held January 11 at Newark. The result was a victory for the Traffic Department, who won two of the three games. The score of the Traffic team for the last game was but five points more than that of the Plant Department.

The participants were:

Traffic Department team: Messrs. Van Wagner; Merklinger; Earl; Brush; Story; manager, Bayles; linesman, Beal; scorer, Hartzell.

Plant Department team: Messrs. George; Gahs; Brainard; McNaughton; Maguire; manager, Mooney; linesman, Pilger; scorer, Pantanious.

Syracuse Bowling League

THE employees of the Central Division located in Syracuse have a very successful bowling league which is in the second year of its existence. This league is composed of eight five-men teams representing the different departments as follows: Plant Department, 5 teams; Commercial Department, 2 teams; Traffic Department, 1 team.

The entire eight teams roll three games each Friday night on the runways of the new Palace Alleys, and a great deal of rivalry and interest has been shown at these contests. The season opened on October 16 and will end March 26. Each team rolls three contests of three games each with every other team. The first round was completed on November 27, at which time Plant Team No. 1 led the league, and the Traffic Team held undisputed possession of last place.

A special two-man handicap tournament was held by the Bowling League on January 16, the teams being arranged so that a man with a high average was paired with a man with a low average in order to make the contest as even as possible. Three games were rolled by each team, and the total pins for three games, coupled with the handicap allowed, determined the order in which the teams finished. Young and Newman with a handicap of +9 finished in the lead with a total of 1,102 pins. Lines and Potts with a handicap of —15 and Lane and Peters with a handicap of +3 finished second and third respectively.

Western Division Tennis Club

DURING the past season a "Telephone" Tennis Club was organized by employees of the New York Telephone Company and the American Telephone and Telegraph Company at Buffalo. Regulation sized courts were built by the club for the exclusive use of its members.

Owing to a rather late start, by the time the courts were completed and the club properly organized the season had advanced so far that the players were unable to participate in any of the tournaments. A good start was made, however, and the club is looking forward with much enthusiasm to the coming summer. An active program has already been arranged. The club was organized by the following employees of the two companies:

President, C. W. Little, Traffic Dept., New York Telephone Company; Secretary and Treasurer, B. A. Smith, Plant Dept., Amer. Tel. & Tel. Company; W. L. Newman, Plant Dept., Amer. Tel. & Tel. Company; P. McH. Wygant, Traffic Dept., Amer. Tel. & Tel. Company; A. L. Barnby, Revenue Accounting Dept., N. Y. Tel. Co.; F. E. Martin, Traffic Dept., N. Y. Tel Co.; A. L. Benedict, Traffic Dept., N. Y. Tel. Co.; F. B. Schoof, Plant Dept., N. Y. Tel. Co.; J. F. McIvor, Plant Dept., N. Y. Tel. Co.; Geo. D. Moss, Plant Dept., N. Y. Tel. Co.

Waterbury Trophy Won by Engineers

THE famous Waterbury Bowling Trophy, which has been held for two years by the Commercial Engineering Sharks, was won on January 7 by a team from the Engineering Department. The contest was of three games, total pins to count, and proved to be unusually exciting.

The possession of the trophy, which is the gift of Mr. H. R. Waterbury of the Commercial Engineer's office, has been very closely contested for a number of years, but it is confidently predicted by those familiar with its history that it has at last found its final resting place.

The total pins of the "Sharks" numbered 2,278 while the winners added 407, finishing with 2,685 pins.

Metropolitan Plant

DEAR MR. EDITOR:

IT gives me great pleasure to write to you as I feel that you should know everything of interest in the telephone field.

The other evening there was a gathering at the Telephone Club of the finest lot of Wire Twisters, Pot Heaters, Backtap Men, and Galvanometer Loopers that you ever saw.

It is supposed that the main pleasure of the Splicer, as put down in the Book of Construction, is the twisting of wires and the covering of them with a lead sleeve as soon as possible so that nobody can see them. The Helper's pleasure is obtained from his desire to smoke at the top of the hole and from withstanding the temptation to spill hot solder or hot paraffine down the Splicer's neck. This pleasure is supposed to be exceeded by the pleasure of the Backtap Man in mussing up the main frame so as to drive the Wire Chief crazy. But even this pleasure is said to be exceeded by the Galvanometer Man who gives the Splicing Foreman a loop four or five miles away from the exact location of the trouble and then watches him try to find it.

However, all of these pleasures are very small when compared to the real pleasure which they had at the meeting in question.

There was bowling, billiards and pool; there were athletic exercises of various kinds, club swinging, hand swinging and acrobatic feats. Everybody was glad to meet everybody else. We received some nourishment and went home about 1:00 o'clock, perfectly satisfied that we had done our best to make every one else happy.

Telephone Bowling Match

Buffalo—Syracuse

A TELEPHONE Bowling Match was held January 16 between two five-men teams in Syracuse and two five-men teams in Buffalo. A direct circuit was established between the alleys in each city and as each man finished a frame, the result was recorded at both ends of the line. The total pins for three games decided the result, the Syracuse first team easily defeating the Buffalo first team with a total of 2,825 pins against Buffalo's total of 2,608 pins.

Wallace of the Syracuse team obtained both high individual and high three-game total scores with 256 and 706 pins respectively. Wallace also rolled the second high individual score of 239, and Taynton of the Syracuse first team and Pickard of the Buffalo first team tied for third individual with a score of 232. Cately of the Syracuse first team rolled the second high three-game total with a score of 604. Guillamie of the Buffalo second team rolled third high three-game total with a score of 582. The Buffalo second team defeated the Syracuse second team by a score of 2,659 to 2,533.

Long Island Bowling Tournament

THE final scores made in the Elimination Bowling Tournament held in the Long Island Division, October 5 to December 18, 1914, show the following highest averages:

No. of games	Name	Department	Average
9	Batcher	Suburban	181 2/3
8	Herchenroeder	Revenue Acct.	188 5/8
7	Craeger	Equipment	163 4/7
6	Plump	Commercial	184 1/2
5	Behling	Equipment	151 2/5
4	Deyo	Construction	149
3	Melloh, H.	Equipment	171 1/3
2	Bard	Equipment	129 1/2

Co-ordinating the Nation

Telephone development in the United States has been following the laws of nature. Dr. Jacques Loeb, who has discovered many fundamental biological laws, says that a colony of minute organisms, placed in a glass jar, will swim hither and thither without regard to one another. But when a small quantity of carbonated water is added to water in the jar, the character of the activities of the crustaceans changes at once. All the members of the colony crowd instinctively toward the side of the glass from which light comes. From this phenomenon, Dr. Loeb derives the suggestion that just as the freedom of will of the crustaceans is abrogated by the admission of acid to the jar, so the actions of men respond to environing influences.

The United States might well be likened to the glass jar of Dr. Loeb's experiment. The telephone is the acid which has influenced the colony of human beings to change their social and commercial practices. When the telephone was invented, the United States consisted of 37 commonwealths loosely held together, each filled with energy and enterprise, but lacking in organization and efficiency of action.

The arrival of the telephone changed conditions. The people of the nation saw a new light. Loose ends were gathered up. The confederation grew into a compact organization of 48 states instead of 37. New living conditions were created; social and business methods were put on a broader and more efficient basis, and the passing of sectionalism and race feuds began. The nation became an organized body as it increased its use of the telephone, and there was no loss of the spirit of self-help and democracy that was its birthright. The completion of the transcontinental telephone line now brings new light to a united nation and starts a new period of growth and development as the ideal of universal telephone communication draws nearer and nearer to realization.

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"Working, Not Waiting, Brings Business"

"THE best method I know for getting the most out of my working time is to keep busy at my ***telephone,***" said a successful salesman recently.

"I don't ***wait*** for orders, I ***work*** for them. I use the telephone because it helps me to reach more people and to get more business quickly than I could by any other method."

This suggestion may help you to get more business. Don't wait for orders —work for them—by telephone!

NEW YORK TELEPHONE COMPANY

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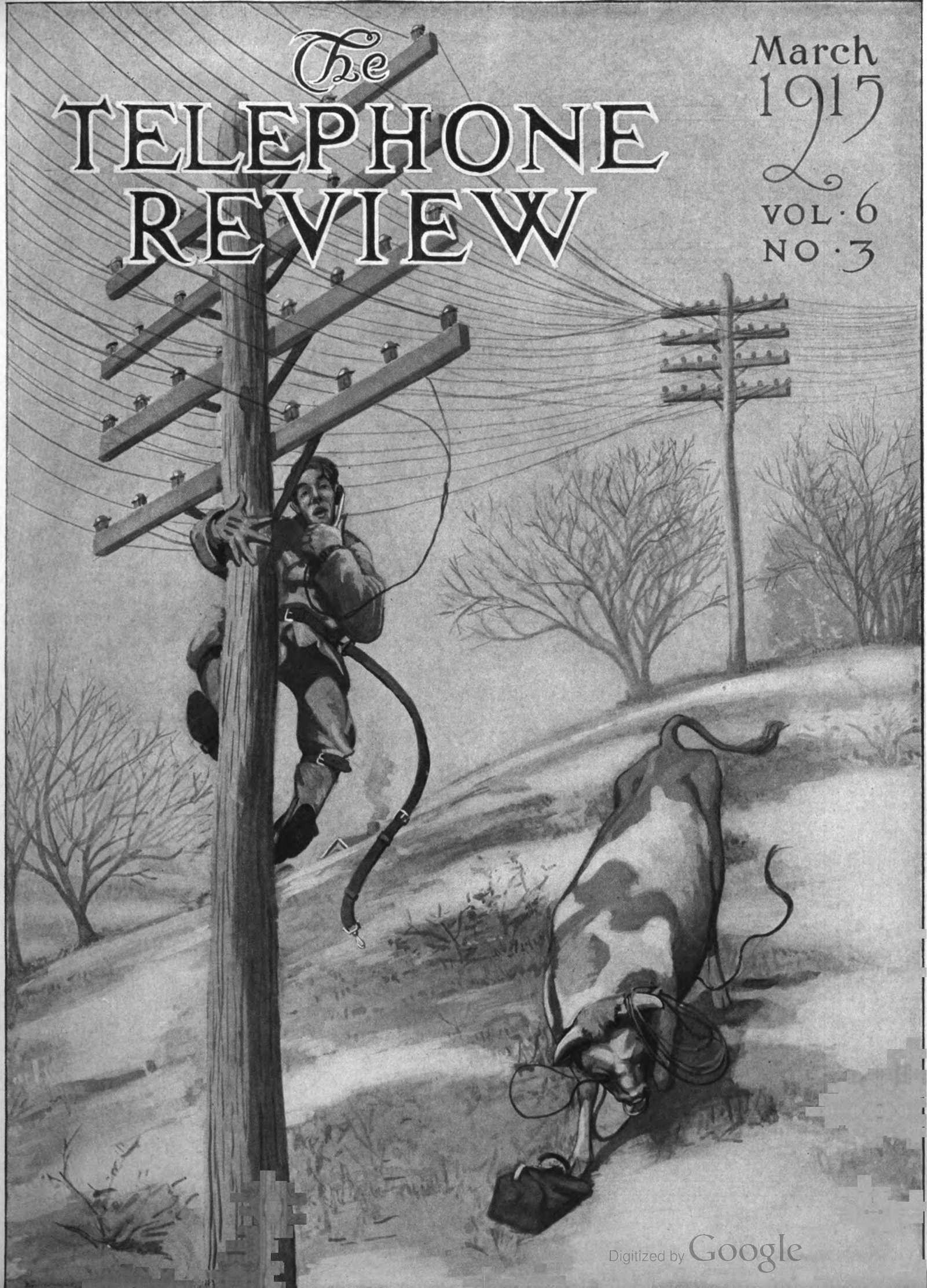
The TELEPHONE REVIEW

March 1915
VOL·6
NO·3



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The TELEPHONE REVIEW

VOLUME·6· NUMBER·3

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The TELEPHONE REVIEW
J. D. NEWMAN, Editor.

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VOL. VI. MARCH, 1915 No. 3

The New York City Rate Situation

THE following statement made by President U. N. Bethell, in explanation of the reductions proposed by the New York Telephone Company in its rate schedule for New York City, will be of interest to the readers of THE TELEPHONE REVIEW:

THE New York Telephone Company has been in a peculiarly trying position. While the Public Service Commission has been investigating its accounts and seeking to determine a valuation of its property through its engineers and accountants coöperating with the New York Telephone Company, through its Appraisal Committee of distinguished engineers, the Foley Committee has also conducted an investigation covering part of the same ground, and notwithstanding these investigations several mandatory rate bills have been introduced in the Legislature.

To compile the information called for by the investigating bodies, and to properly present the facts at hearings before legislative committees in Albany, a large part of our Executive force was kept constantly busy, and found practically no time to give to their regular operating duties, while the clerical force in many departments was becoming rapidly demoralized through excessive overtime work on nights and Sundays.

The Company has never objected to an orderly investigation of its affairs, and now has no complaint to make, except that through the activities of all these various bodies its organization has been put under such strain as to threaten its ability to render an efficient telephone service.

Therefore, to end a situation which had become almost intolerable, the Company determined to accept a prima facie finding of the Commission based on evidence introduced by the Commission, without waiting to put in its own testimony. The Company has done all it could properly do by coöperation, and by furnishing all information asked for promptly and completely, to make commission regulation effective in this State.

According to the morning papers, Professor Bemis calculates the cut under the Company's schedule at only $2,386,091, stating, however, that there may be an additional net loss of from $100,000 to $200,000 because of items not heretofore considered by him. This claim makes from $2,486,091 to $2,586,091 against the Company's claim of approximately $2,700,000. In an estimate of this kind, covering so many factors, a variation of 10 per cent. either way would not be unreasonable. Therefore, the difference between Professor Bemis's estimate and our estimate is not very surprising after all. It is very significant, however, that within ten days items previously overlooked have been discovered, which amount to somewhere between $100,000 and $200,000. While a fairly accurate estimate can be made of the known items of loss, based on statistics showing present traffic, it is impossible for anyone to accurately compute all the losses that may be involved because of the many changes made in the basic units. For instance, there are changes made in the minimum annual rate to be paid by the subscriber, the allowance of messages which he may send for that minimum rate, the rate per message at nearly every point in the schedule, and particularly the classification of messages, a great volume of traffic being changed from toll to local, much of which will fall within the minimum allowance and be carried practically without cost to the subscriber and without producing any additional revenue to the Company.

The far reaching effects of such a change in rates as is set forth in the Company's schedules cannot be definitely ascertained by any mathematical calculation. While allowance may be made for losses due, among other things, to the conversion of present toll messages to local messages, a large volume of new traffic that will inevitably arise, yielding no additional revenue, because it will fall within the minimum allowance which has been increased from 600 to 840 messages, and which will entail a large additional expense to the Company, should not be overlooked. Yet no one can measure this loss accurately. Our figure of $2,700,000 does not include this loss, but in our best judgment, based upon many years of experience, this is a very considerable item and should not in fairness be ignored.

Professor Bemis puts the cost of the property at $65,000,000, and ignores present value. He also intimates that the Commission's valuation includes franchises. Evidently he has not read the record. One of the Commissioners stated that on the testimony of the Commission's own expert the Company's property in New York City was shown to have a value of $89,000,000, exclusive of franchises, going concern value, and all other intangibles, and after deducting $7,000,000 for accrued depreciation. The amount finally found by the Commission was $82,000,000 as of June 30, 1914, to which the Company has asked to have added $1,796,686 for property added between that date and January 1, 1915, as testified to by the Commission's expert.

We have made every effort to reach a fair adjustment, and as to many matters have subordinated our legal rights to what we believe to be the

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popular view, knowing that the general satisfaction of our patrons is of far more value to the Company, in the long run, than the revenue that might be saved by protracted litigation.

We appreciate that no adjustment can ever be made that will be entirely satisfactory to everyone, but we are confident that the schedules which we have submitted are based on sound principles, will reduce our revenue substantially as estimated, and will prove as generally satisfactory as any that can be devised.

New York City expects and the Company desires to maintain its service at the highest possible point of efficiency, and we should be derelict in our duty to the public if to save ourselves annoyance we should accept conditions that would unavoidably result in a debasement of the service.

Industrial Training

THERE is a movement among educators throughout the country to fit pupils in the schools for the "realities of contemporary life" by vocational instruction.

For many years past manual training has been a part of the regular curriculum of most schools, and under the head of Civics instruction has been given in some of the industrial arts, including telephony, telegraphy, railroading, etc., while stenography, typewriting, cooking, and other subjects have been taught fully.

Vocational instruction as it is being introduced, however, goes a step further, and aims to bridge the gap between theoretical and practical knowledge of the subjects taught, and actually equip pupils for ordinary vocations.

When large bodies of trained workers are admitted to the ranks of industry, an entirely new force may be expected to enter the field, and as its influence is felt a higher value will be placed upon the importance of knowing all there is to know about their jobs by the workers who already fill them. That "knowledge is power" never was truer than it is to-day, and if it should prove to be truer to-morrow, we who are workers to-day at least have an equal start with those who will be workers with us to-morrow, and it will be our own fault if they should outstrip us.

Indeed, at the start we have the advantage, because we know better than their teachers can know what are the requirements for success in our business, and we can apply ourselves to the attainment of the specific knowledge which will be of the greatest benefit to us.

It has been remarked by someone that "The most successful men do not reveal the secret of their successes." It is more than likely that they would be unable to do so if they tried. "Lives of great men oft remind us" of this or that or some other quality which contributed to their success, but often most of those qualities can also be found in other men in humbler walks of life who never mounted even the first rung of the ladder. Two men may be just as like as two peas in a pod, and yet, under as nearly identical conditions as two peas in a pot of boiling water, the two men will develop different characters just as the two peas will be dissimilar when put on a dish to be eaten.

It takes a long time to succeed in anything—really succeed. One requisite of success is to realize this. There is something new to learn every day, and it is what we learn, and not the number of days it takes to learn it, which counts.

Therefore, let us study our routines, our rules, our rate schedules, our instruction books, the instructions that are issued from time to time; study the work we are doing and what others are doing; read THE TELEPHONE REVIEW and be contributors to it; and concentrate our heart and mind upon the wonderful business in which we are engaged and its possibilities.

A Business Instrument

IN the use of the voice it is fitting that telephone employees set the standard for the rest of the business world. A big step has been taken by our slogan, "The Voice with the Smile Wins," but progress is never made by resting content with what has been accomplished.

Over the telephone, the voice and its use are practically the only means of projecting the speaker's personality to the person at the other end of the wire, so especial care has to be taken to utilize the possibilities of the organs of speech. A cheerful and good tempered voice is not enough. Spirit and interest must vivify it; responsiveness must be shown in its variation of tone. The quality, especially, must be carefully controlled; for any rasping note, no matter how far from being *designed* to convey a sense of impatience, of carelessness, or disregard, will nevertheless be construed so in nine cases out of ten. Some voices are naturally pleasanter than others, but training works wonders, and in most cases all the training needed is persistent attention to the quality of voice used. By consciously trying, every time we use the voice, to keep it low and make the tones as full and well rounded as possible, we can develop its quality enormously. Thoughtful effort can mold the voice into a really adequate instrument with which to convey personality as well as thoughts—in short, an adequate instrument with which to do business.

The power that may be exerted by the voice well used, is sometimes quite surprising. Witness, for instance, the small boy whom a popular writer has described. He showed what could be done with the voice by reciting a mixture of his elocution masterpieces, of which this is a typical stanza:

"On Stanley, on. Charge, Chester, charge.
And let who will be clever.
The boy stood on the burning deck,
But I go on forever."

The applause which greeted this accomplishment was so loud and hearty that the boy decided it made no difference what he said, so long as he said it *well*. That is not precisely the case in business. Still there is a parallel. Although it makes a lot of difference what we say, it also makes a lot of difference *how* we say it. A good-humored voice of pleasing quality, full tones, and ready inflection can smooth many a rough place and keep many a difficulty from arising.

The Twenty-Fifth

THE only means by which the mailing list of THE TELEPHONE REVIEW can be kept up to date is for notification to be sent to the Editor by the offices concerned. This is equally important when the number of copies is to be reduced, or increased, as when a new office has been opened. Such notices should be sent in by the 25th of each month in order to insure the proper distribution of the magazine for the following issue.

This date is also the closing date for the receipt of contributions for the next issue of the magazine, and while notices and contributions may be forwarded earlier, they should be sent not later than this.

As Reported

In the New York *Morning Telegraph* of March 5, we find the following enlightening conversation:

DURING the hearing on telephone rates, before the Assembly Committee on Electricity, Gas and Water yesterday, Patrick F. Cotter, who represents the Nineteenth Manhattan district in the Lower House, spoke for his bill.

This bill did not seek much, only to establish a three-cent rate for telephone calls in New York and a $2 flat charge per month for house service, unlimited.

"How did you come to fix upon this rate?" asked Assemblyman Joseph Steinberg, who thought the rate a harsh one on the companies.

"I don't know," replied Cotter. "I just thought the people would like to have rates of that sort and so I put them in."

"Without figuring if the telephone companies could do business on that basis?" asked Steinberg.

"Sure," answered Cotter. "I represent the people. What do I care about the companies?"

And so is legislation framed.

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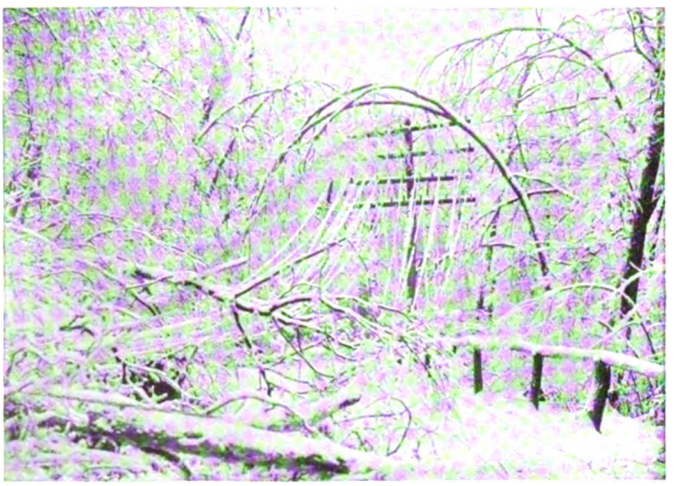

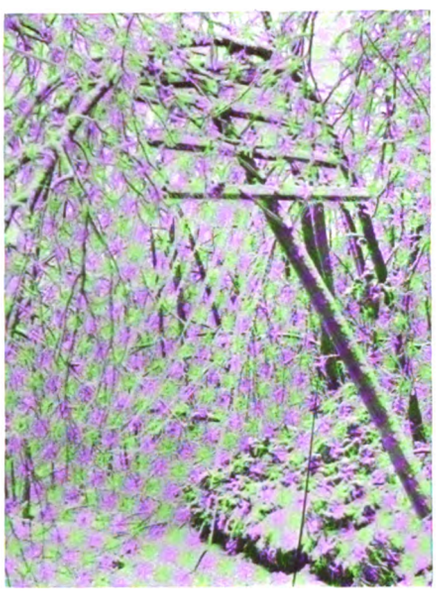
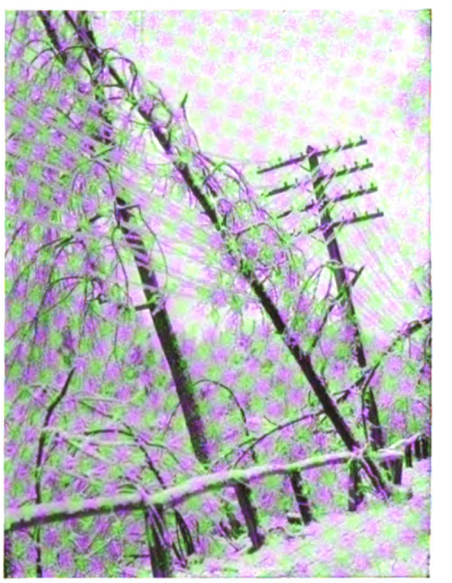
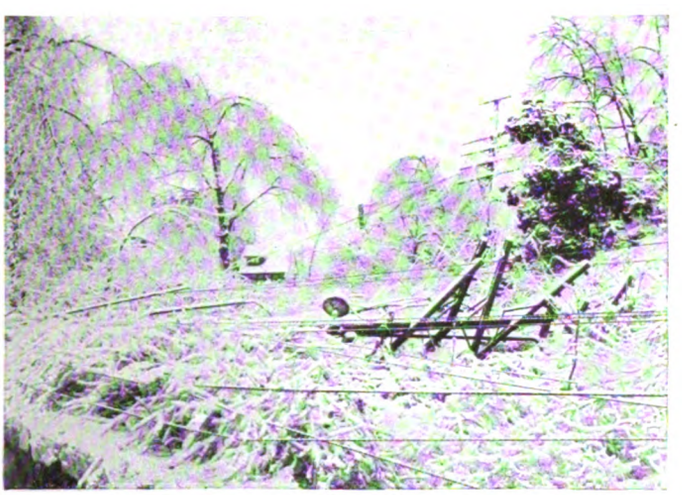
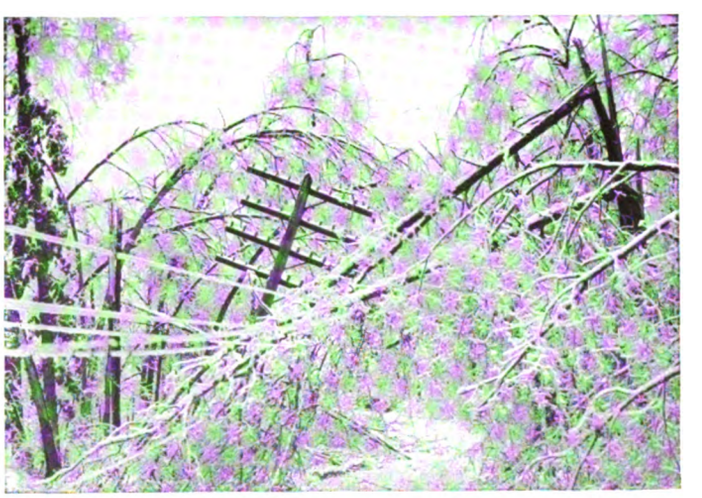

What a Storm Can Do in a Day

SCENES IN TUXEDO PARK

A Condition For Which the Telephone Company Must Be Prepared With Men, Material, and Money

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The Distribution of Telephone Supplies

Recent Developments in the Territory of the New York Telephone Company

THE great mass of articles dealt with through the ordinary channels of trade are commonly described as merchandise. When merchandise has been purchased for use by the Telephone Company, it is thereafter known as "Supplies." Every Telephone Company employee requires supplies in connection with the work. The problem of distributing supplies, therefore, is a broad one and could not be described in a single article.

1. INTERIOR OF PLAINFIELD STOREROOM
A typical one man storeroom, New Jersey Division, New York Telephone Company

This article will present to the readers of THE TELEPHONE REVIEW a brief treatment of the equipment used in distributing supplies to the plant forces in small and isolated districts, and an illustrated description of the store and automobile equipment used at two of the most recently designed large distributing depots of the New York Telephone Company.

With the growth of telephone business there has been created the machinery and organization necessary to distribute supplies to plant employees with the greatest efficiency and economy that study and experience have been able to devise. During the period of this growth the commercial automobile has been developed to a relatively high state of perfection and this labor-saving device has been advantageously used in the work.

The fundamental requirement of any supply distributing system is that it shall provide material for installation when, where, and as wanted by the working forces. It must also provide means for removing from subscribers' premises and from points in the field the materials that have served their purpose and have been disconnected. Both of these functions must be performed in a manner that will be economical to the Telephone Company as a whole, and that will conserve the working powers of the employees to the end that their energies can be directed to placing plant in service promptly and in a neat and workmanlike manner.

In the creation of such a system of distribution as has been indicated, it is necessary to establish depots for the temporary storage of supplies while they are on the way from factory to employee. In English practice these depots are defined as "Stores," in American practice they have come to be known as "Storerooms." New York Telephone Company storerooms are of great variety with respect to size, character of material handled and number of operating employees. Their size depends on the quantity and class of plant work handled in the territory which they serve.

In isolated locations where the volume of work is small, the plant workman is his own storekeeper, installer, helper and trouble man. For this condition the storeroom is usually a good sized locker located in, or adjacent to, the central office terminal room. It is provided with conveniences for storing a variety of material, each item of which is of small volume, in suitably designated places so that each item can always be in its place. There are no standard features of unusual interest in such lockers, so no illustrations of them are given.

Next in order will be found locations where the amount of plant work done requires that at least one employee shall devote his entire time to caring for supply distribution. In a location such as this, greater working spaces are required. Storage shelves and other facilities for handling a larger volume of a variety of items, at a minimum of labor and with the greatest celerity, are needed.

A comprehensive view of the facilities provided at such a location is shown in the first illustration.

The differences between the storeroom described in the foregoing paragraph and a storeroom serving larger quantities of material in a larger and more densely populated district would be more with respect to size than detail. Similar provision would be made for a variety of items, but the floor and shelf areas would be sufficiently increased to care for the greater volume of business.

In the largest and most densely populated districts the problem requires changes in detail as well as size, so the next description will cover the latest development of the largest storeroom in the New York Telephone Company system; namely, the Central Storeroom,

2. INTERIOR OF CENTRAL STOREROOM
A corner in a typical large storeroom in the Metropolitan Division, New York Telephone Company. 235,560 units delivered, 202,494 units picked up, 60,812 car miles made during the year 1914 by the five trucks delivering subscriber station supplies

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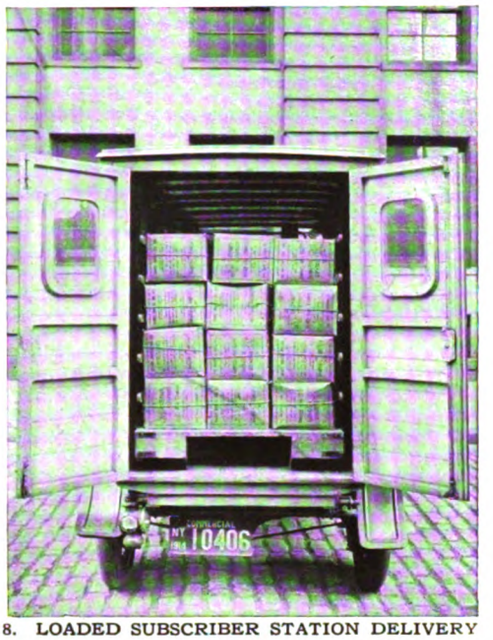
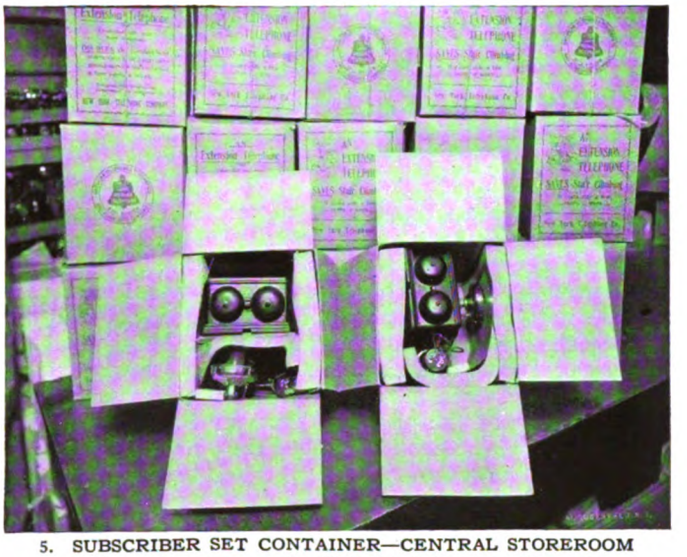
3. MINOR REPAIR SHOP—CENTRAL STOREROOM
Where 154,908 units were repaired during the year 1914



8. LOADED SUBSCRIBER STATION DELIVERY TRUCK—CENTRAL STOREROOM

4. PACKING TABLE—CENTRAL STOREROOM



5. SUBSCRIBER SET CONTAINER—CENTRAL STOREROOM
The books shown are a subscriber's set of Telephone Directories

6. ELEVATING TRUCK AND PLATFORM—CENTRAL STOREROOM
The platform will hold 700 pounds that can be easily lifted from the floor by one man

7. LOADING PLATFORM—CENTRAL STOREROOM
One man easily loads 700 pounds of equipment in an automobile in one operation

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9. AVERAGE WORKMEN'S LOAD—BEFORE AUTOMOBILES WERE USED
Hundreds of men used to start on their day's work with loads similar to these

77 Bethune Street, New York City. The supplies disbursed here are almost exclusively used in the installation of subscribers' equipment.

At this storeroom copies of contract orders are received, covering installations in the Boroughs of Manhattan and the Bronx in the City of New York. It is the function of the storeroom forces to select the material required for the installation called for by the contract order, pack it and deliver it on the subscriber's premises, so that the plant workman's entire energy is devoted to installing the equipment.

This storeroom also collects disconnected equipment in the most economical manner and operates a repair shop in which minor repairs are made.

In the repair shop minor repairs are made on 71 per cent. of the pieces of apparatus disconnected from subscriber installations. The apparatus needing major repairs is sent to the repair shop of the New York Distributing House of the Western Electric Company. This illustration gives a good idea of the size of the storeroom and repair shop.

The fourth view shows a force of storeroom employees packing subscriber equipment in standard containers for delivery by automobile. At the left of the photograph is seen an assembly truck containing the various units needed to make up complete sub-station sets. In the center is seen a packing table, on which the men are packing containers, and at the right is seen a platform loaded with packages ready for the automobile and lifted from the floor with the elevating truck that will be described later.

The standard cardboard container used here is shown in detail in illustration No. 5. It is designed to contain the apparatus necessary for a single telephone station using desk stand or compact type wall set equipment. It will be observed that the Telephone Directory begins its work by preventing damage to the equipment during transportation and thus renders an additional service to that with which the general public is familiar.

One of the most recently introduced labor-saving tools that is in extensive use at this storeroom is shown in the sixth illustration. This is a combination of an elevating floor truck with a light platform having side racks to support the material. Under previous practice, a warehouse platform truck consisted of a set of wheels and axles supporting a substantial platform; the platform was equipped with side racks to support the material. With the development of the automobile, it became necessary to reduce the loading time as much as possible. The logical way to do this is to prepare the load while the automobile is away on its delivery trip and, as soon as it returns, push the prepared load on the motor car and start it off on another trip. This could be done with the ordinary form of warehouse platform truck, but that method involved carrying considerable dead weight.

10. AVERAGE WORKMAN'S LOAD—NOW THAT AUTOMOBILES ARE USED
This man's energy is expended in useful work

To eliminate the dead weight, the warehouse platform truck is now divided

11. FLEET OF AUTOMOBILES—NEW YORK CITY
Each chauffeur is uniformed as shown in Photograph No. 7

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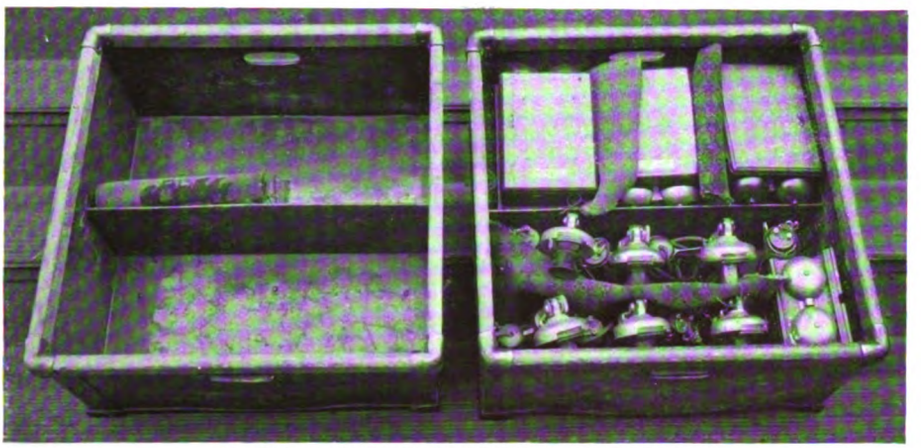


12. FIBER TOTE BOX—CENTRAL STOREROOM

into two units. One unit consists of the wheels and axles with a steel platform which can be elevated or lowered by means of the handle of the truck. The other unit consists of a light platform mounted on wooden skids and supporting the side racks. The elevating truck is pushed under the platform, the handle is depressed, and the load is elevated from the floor and can be moved to a point convenient to the automobile.

Illustration No. 7 shows the elevating truck under the platform with the load lifted from the floor and the truck being pushed into the automobile that is to receive it.

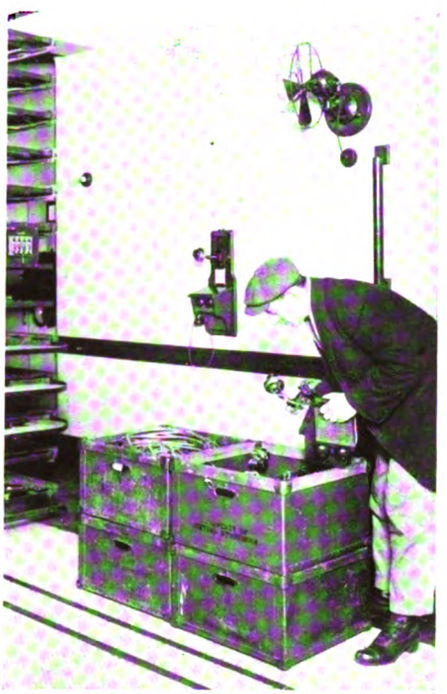
Illustration No. 8 shows the interior of the motor truck with the loaded platforms in place. Each of the subscriber station delivery trucks used will carry two loaded platforms.

The automobile has made it possible to deliver subscriber station supplies direct to the subscribers' premises without calling upon the skilled workmen to perform the unskillful work of portaging heavy loads of material. The accompanying illustrations show the progress that has been made in this respect. Illustration No. 9 shows an installer and helper loaded with supplies that were formerly carried by them from storeroom to installation.

Illustration No. 10 shows an installer as he starts to make an installation under present conditions, carrying just the tools actually needed to perform his work. He does not require a helper except under unusual circumstances.

Illustration No. 11 shows the fleet of motor cars now in use to distribute supplies in and around New York City. These cars are capable of discharging their loads efficiently and promptly within a radius of twenty-five miles of the central storeroom. The whole fleet consists of 2 5-ton, 1 3-ton, 1 2-ton, 3 1½-ton, 6 1,500-pound and 1 700-pound car. The five subscriber station delivery trucks that deliver the bulk of the subscriber station supplies are shown near the right of the line. Each is of 1,500 pounds capacity. The other cars handle the general loads for sundry purposes.

In addition to the work previously described, the automobile fleet picks up



13. TERMINAL ROOM—WORKMAN USING TOTE BOX

14. BIRD'S-EYE VIEW—PIERCE AVENUE YARD

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15. AUTOMOBILE GARAGE—PIERCE AVENUE YARD

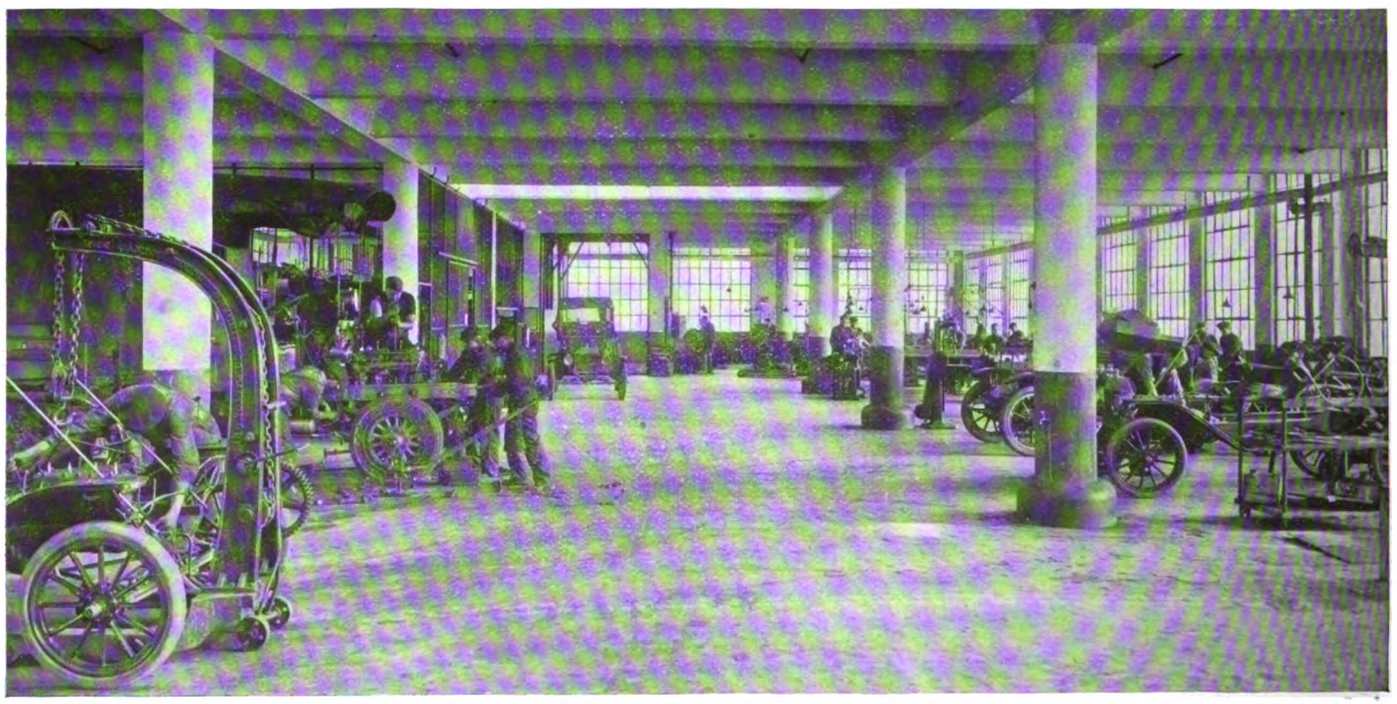
heavy and bulky disconnected equipment from subscriber stations and also picks up equipment of all kinds from central offices and delivers large quantities of miscellaneous heavy material for the Western Electric Company and the plant construction forces to the various storeroom and field points within the radius of their operation.

Disconnected equipment must be protected from injury while it is being carried in the automobile to the storeroom. The necessary protection is offered by light weight fiber tote boxes, with which the pick-up cars are provided. Each tote box will carry approximately sixty pounds, which is the weight of four complete subscriber station sets of the desk stand or compact hotel set type. When the equipment is removed from the installation, it is placed in one of these tote boxes.

Illustration No. 12 shows such a tote box with and without a full load. The apparatus is protected against abrasion by means of pads and rolls made from discarded carpets and rugs that have been cleaned and made up of suitable size.

The tote boxes shown in illustration No. 12 serve another important labor-saving function. Great quantities of individual pieces of material are removed from service by installers and troublemen. Their work is directed by wire chiefs in congested districts and the workmen themselves operate in comparatively small areas. The individual pieces are comparatively light in weight, but the aggregate is cumbersome and heavy. In order to save rehandling as well as to furnish the working forces with a place for such disconnected items, a number of these tote boxes are provided for each of the wire chiefs' quarters, from which this class of work is directed. As a workman returns to headquarters with disconnected items, he places them in a tote box and protects them against injury in transportation. When several tote boxes have been filled in this manner they are picked up by the first automobile touching at that location and empty tote boxes are left so that the operation can be repeated. Picture No. 13 illustrates this situation.

Up to this point we have dealt entirely with subscriber-station material. This class of material involves a great deal of labor, but there are many other classes



16 AUTOMOBILE REPAIR SHOP—PIERCE AVENUE YARD

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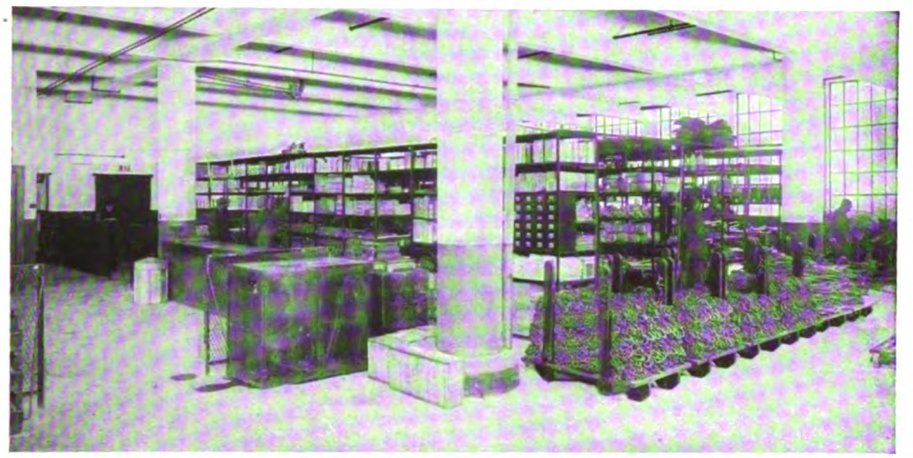


17. GENERAL INTERIOR—PIERCE AVENUE STOREROOM

of supplies which are handled by the Telephone Company. Cable, subway material, material and tools for splicing cable, and many other items have been frequently mentioned in the columns of THE TELEPHONE REVIEW as being used by the Telephone forces. The latest storeroom and yard for handling this class of supplies is designated as the Pierce Avenue Yard, and is located in Astoria not far from the Long Island terminus of the Queensboro Bridge. The Pierce Avenue Yard is about fifteen minutes by automobile from the center of Manhattan Borough, City of New York.

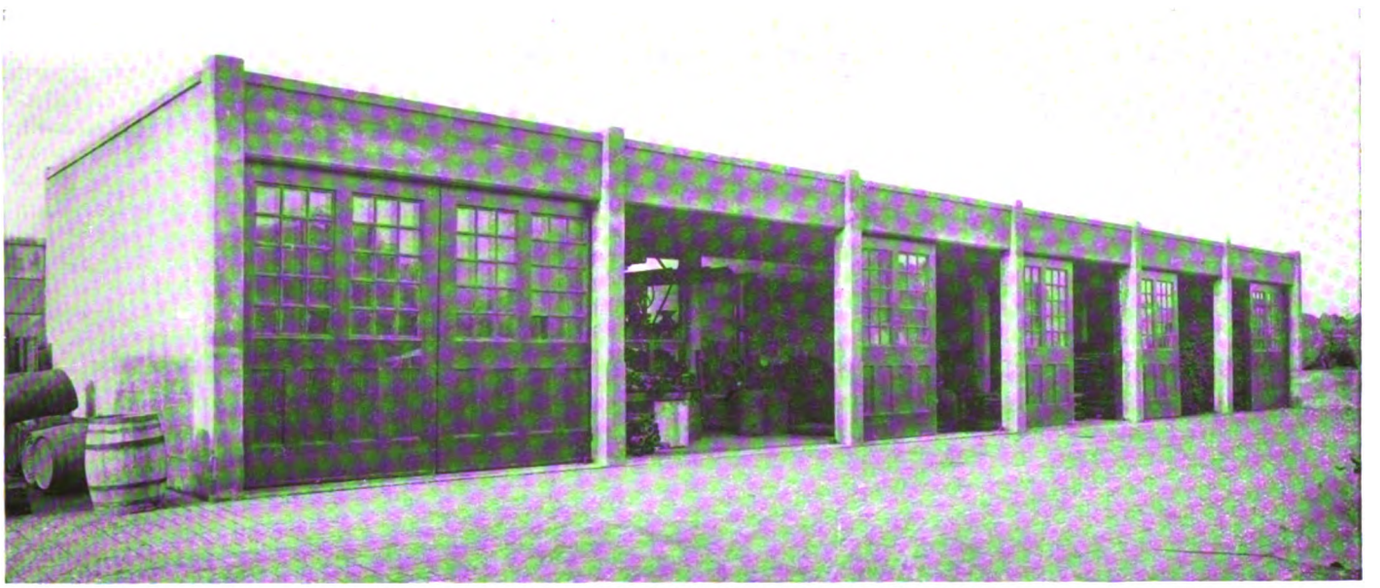
At the Pierce Avenue Yard is located a storage yard for the heaviest class of material used in the telephone plant, a storeroom for housing lighter material, extensive sheds for the storage of perishable yard material and valuable junk, and a fully equipped and commodious garage and repair shop. The buildings are all of reinforced concrete construction of the most modern fireproof design. The yard is fenced in with reinforced concrete walls.

18. CORNER INTERIOR—PIERCE AVENUE STOREROOM

Illustration No. 14 is a bird's-eye view of this plant, which occupies a piece of land 200 feet by 240 feet. It has facilities for storing 15 automobiles, 250 reels of lead-covered cable, and has ample space for the storage of conduit, pipe, manhole heads, other material and tools used by the Empire City Subway Company and the New York Telephone Company.

The automobile garage is in the large building at the left and is equipped with every modern convenience for repairing and storing automobiles. There is also a good sized forge shop located in the shed at the left, adjacent to the garage, for repairing automobile parts as well as the tools used by the Empire City Subway Company. The next series of pictures will illustrate many of the details of this plant. No. 15 is an interior view of the automobile garage with its massive fireproof interior construction and ample window area, providing an abundance of natural light. It is equipped with an air compressor, stationary gasoline, and portable lubricating oil tanks.

The automobile repair shop is located on the second floor of the garage building. Its interior is shown in illustration No. 16. The massive fireproof construc-



19. REINFORCED CONCRETE SHED—PIERCE AVENUE YARD

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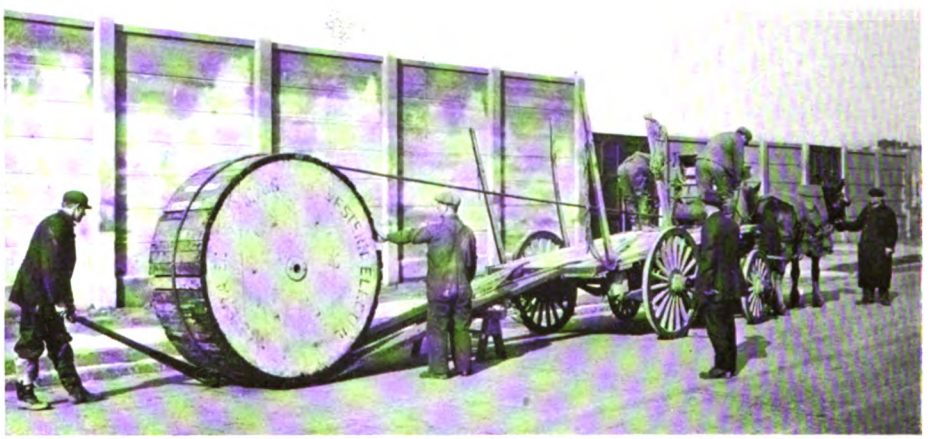
20. CENTER STORAGE SPACE AND CABLE PLATFORM PIERCE AVENUE YARD—NEW YORK TELEPHONE COMPANY

tion and splendid light are again illustrated in this view. The car elevator is shown in the distance. The machine shop is located in the corner at the right of the elevator. A suitable tool and stockroom is at the left of the elevator and runs toward the center of the building. The paint shop for refinishing car bodies and chasses is on the same floor with the repair shop but separated from it by a fireproof partition and automatic fire doors. It has been made as dustproof as possible and occupies the space at the end of the floor that could not be shown in the picture.

The storeroom for the supplies needed by cable splicing, cable placing, subway and other construction gangs is located on the ground floor of the garage building, separated from the garage space by a fireproof partition. Illustration No. 17 is an interior view showing the general arrangement of counter and stock racks, and No. 18 shows one corner in which are located the stock racks for subway construction tools. Note the portable platforms loaded with heavy chains in the right foreground of No 17, and similar platforms under the stock racks, together with the elevating truck shown in No. 18. Their purpose is described in the next paragraph.

At this location another use has been made of the elevating truck and platform that was described in connection with the Central Storeroom. In this case the principle has been applied for transporting heavy material within the storeroom for convenient loading and unloading. The platforms are very heavily constructed, so that one and a half tons can be stored on a single platform. The platforms have their definite locations on the floor of the storeroom. As supplies are brought in which are normally to be stored on these platforms, the platforms are moved with the aid of the elevating truck to the immediate vicinity of the automobile that has brought in the load; the material is unloaded and placed upon the platforms, and the loaded platforms are then moved back into their proper positions and the load lowered upon the floor. Illustration No. 18 shows a group of these platforms in position on the floor of the storeroom, with the elevating truck in the foreground ready to be used at any platform where desired.

Illustration No. 19 is a view of one of the reinforced concrete sheds that line the Pierce Avenue Yard on a part of each of

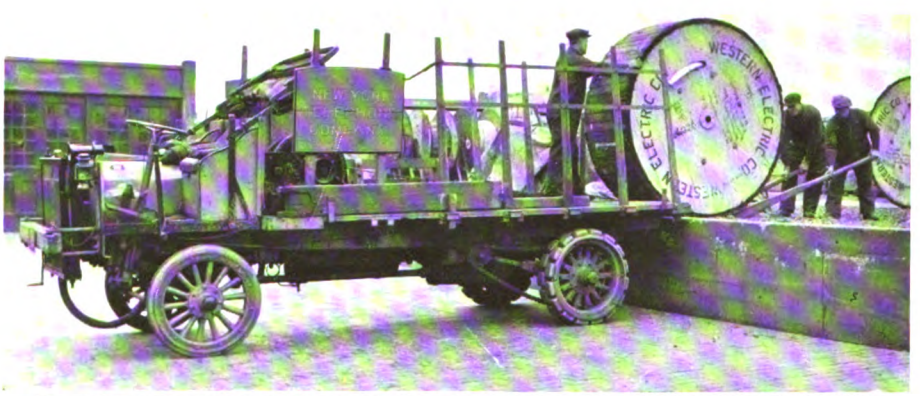


21. REEL OF CABLE BEING LOADED FROM THE GROUND
Requires foreman, four workmen, and driver to tend team

two sides. These sheds are used for the storage of yard material that must be protected from the weather, as well as for the storage of junk metal of considerable salable value.

Illustration No. 20 presents a view of the central storage space in the Pierce Avenue Yard with the cable platform in the background. In this space, as the picture displays, vitrified clay conduit, heavy tools, manhole frames and covers and the other heavy material used by the Empire City Subway Company are stored. This space is paved with asphalt blocks laid on a concrete foundation.

Very few phases of plant work can be mentioned without introducing the words "Telephone Cable" somewhere in the description. At the Pierce Avenue Yard, it was estimated that considerable quantities of cable would be handled



22 REEL OF CABLE BEING LOADED FROM CABLE PLATFORM PIERCE AVENUE YARD—NEW YORK TELEPHONE COMPANY
Requires two workmen and chauffeur guiding reel

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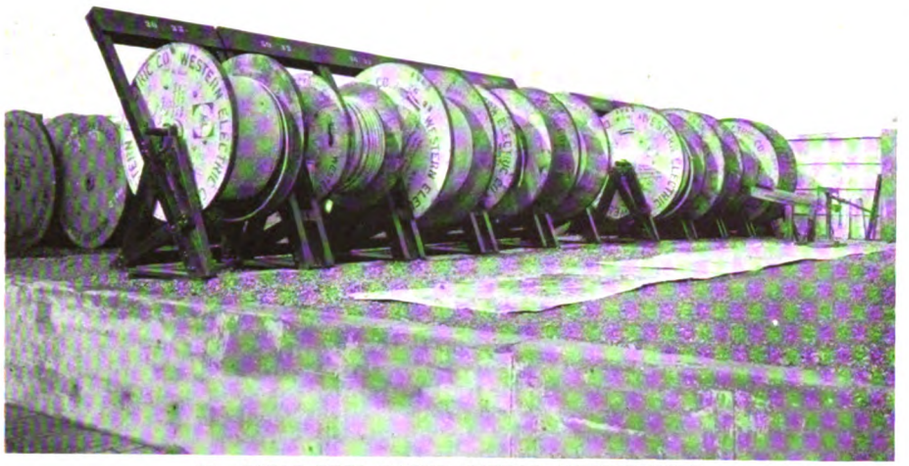


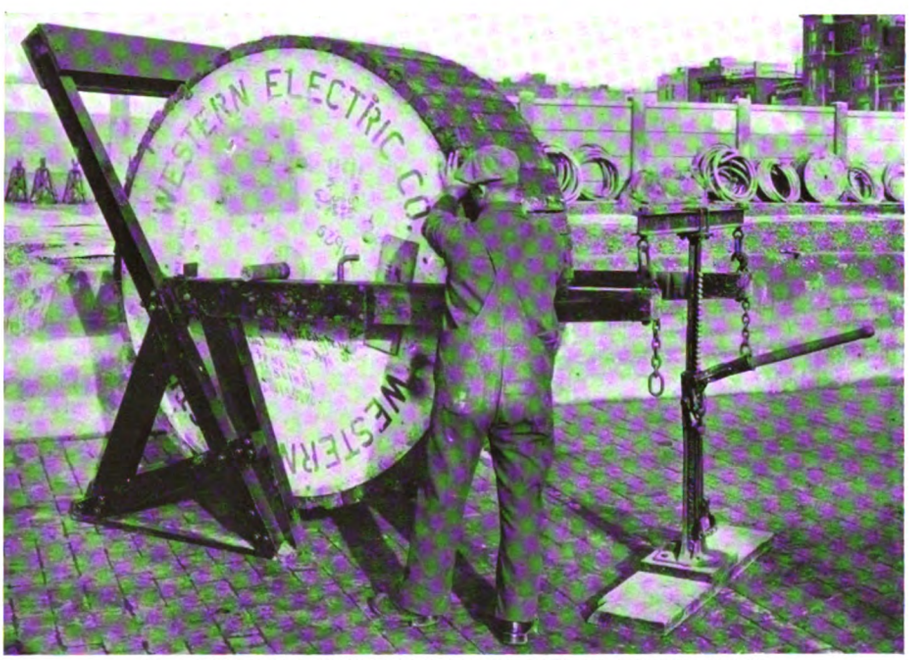
23. CABLE REEL RACKS—PIERCE AVENUE YARD

not only in full reels but in short pieces, and it was deemed necessary to so arrange the yard that full reels could be handled with a minimum expenditure of time and labor. To accomplish this result, the cable storage space is built on a higher level than the general storage space in the center of the yard. The level was selected to correspond with the level of the floor of the average automobile on which cable is transported. The view in the background of illustration No. 20 will give the reader a general idea of the extent of this space and its storage capacity. Full reels of cable weigh up to three tons. The reader will be able to form a better idea of the economy introduced by the cable platform if he can see a picture of a reel being loaded on a truck under previous practice and immediately thereafter see a picture of a reel being loaded under the present labor-saving conditions. Illustrations Nos. 21 and 22 are inserted for this purpose.

Entrance gates are provided at the Pierce Avenue Yard on the cable storage space level, so that reels of cable can be delivered on the cable yard level from the central yard space or from the street. The automobile simply backs up to the gate and the reel is either rolled on or off, as the case may be.

Lead cable is not always disbursed in full reels. A considerable quantity is disbursed in short lengths and in a variety of sizes. It was, therefore, necessary to provide means of cutting off pieces with a minimum expenditure of time and labor. The equipment designed for this purpose is shown in views Nos. 23 and 24. The row of cable reel racks shown in No. 23 is semi-permanent in character and is placed across one end of the cable platform. They are of uniform size and are strongly made wooden frames. Their design is such that the rack ends of a pair of skids can be hung on trunnions on the rack, while the outer ends can be lifted by a lever type of jack.

Illustration No. 24 shows a single cable reel rack. In order properly to bring out the details, it was necessary to move one from the row shown in No. 23 and set it up for demonstration purposes on the lower yard level. In actual operation, a reel can be rolled into position at any one of the racks in the row without moving the rack. The skids and lifting jack are placed in position and the reel lifted until the skids are level, when the reel can be rolled into place on the rack with an easy push.



24. DETAIL OF CABLE REEL RACK—PIERCE AVENUE YARD

Organization Changes

New Jersey Division

Commercial Department

THE headquarters of M. J. Moloney, District Commercial Manager, Northern District, have been removed from Paterson to Jersey City.

Plant Department

Edward S. Klemm, formerly clerk, appointed engineer, New Jersey Division.

Chas. R. Hankinson, formerly loop foreman, appointed line foreman, Elizabeth District.

John F. Tully, loop foreman, Plant Department, Long Island Division, transferred as loop foreman to the Plant Department, New Jersey Division.

Henry G. Eaton, loop foreman, Plant Department, Long Island Division, transferred as loop foreman to the Plant Department, New Jersey Division.

Traffic Department

G. M. Earl, Division Traffic Engineer, resigned, effective January 15, to accept a position with the Bell Telephone Company of Pennsylvania.

G. M. Beal, Division Traffic Engineer, Western Division, transferred to New Jersey Division to succeed Mr. Earl.

Hudson Division

Traffic Department

Miss Mary C. Flanagan appointed Chief Operator at Cohoes, N. Y.

Miss Della Rice appointed Chief Operator at Watervliet, N. Y.

Central Division

Traffic Department

Miss Marguerite Bucknar appointed chief operator at Waterloo, vice Miss Grace Hodge, resigned.

Western Division

Commercial Department

The office of Local Manager, Medina, comprising Medina and Lyndonville central offices, has been abolished, and will hereafter form a part of the Lockport Local District.

Employees who formerly reported to Mr. Arnold will now report to Mr. Rees.

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Wire Chief's Testing Bureau at Columbus Central Office, New York City

By R. S. Jewett, District Inspector, Western Manhattan

THE Beekman and John central offices are in the same building, with terminal rooms on the fifth and seventh floors respectively. In January, 1912, the desk and clerical forces of these offices were combined and the work was handled from the Beekman office. This plan was found to be entirely practicable, and it was possible to assign one clerk and one deskman to other duties. The plan was extended to four other double offices and this relieved six clerks and three deskmen, who were transferred to other duties. The payroll expense of this particular work was thus reduced approximately $9,500 per annum.

Fifteen positions of Wire Chief's desk equipment were released and have been removed and used elsewhere, while three additional four-position desks have been saved to date in connection with new offices. These twenty-seven positions represent an investment of $21,600. The development of the loud speaking receiver and the transfer test line circuit were largely responsible for making this centralization possible, as it provided a ready means for communication between the deskmen and framemen.

In February, 1913, it was suggested that the centralization be extended to offices located in different buildings, in order to obtain the advantages derived from centralizing a larger number of offices, which would allow greater possibilities for specialization and team work and would make use of cumulative small savings, which, in the former centralization, were not sufficient to allow a reduction in the force required for the work, but which would allow such a reduction if a larger number of units were combined.

The Murray Hill central office was already equipped with a Type "B" Wire Chief's desk of four positions, which type, on account of the fact that each position is a unit, allows the maximum flexibility in the distribution and use of the equipment. It was decided, therefore, to make a trial of centralizing the work of the Greeley, Bryant and Murray Hill offices at Murray Hill. These offices represented approximately 22,000 lines and 52,000 stations. This was accomplished in August, 1913, and the work of the three offices was handled by the same number of men that formerly handled the Greeley-Bryant combination, the two deskmen and two clerks who were required to handle the Murray Hill office being transferred.

This trial proved that the plan was entirely feasible and that a real and substantial saving was possible. A six-position Type "B" desk had been ordered for the Fordham office, but not yet installed, and it was decided to install this desk in conjunction with the four-position Murray Hill desk, and to handle the Fordham and Tremont work from the old Tremont desk for the present. A trial on a considerably larger scale could thus be made at comparatively small expense.

1. A-Repair Clerk's Desk: B-Card Files

Space was obtained on the fourth floor of the Columbus Building and this six-position desk was installed there and cut into service on August 16, 1914, the Murray Hill, Greeley and Bryant work being transferred to this equipment. The four-position desk at Murray Hill was then removed to Columbus and installed as a continuation of the six-position desk, and the Columbus, Riverside and Schuyler offices were added to the combination on September 4, 1914. A two-position section of Type "A" Wire Chief's desk was installed at Murray Hill for emergency use.

The six offices in this combination represent a total of approximately 48,000 lines and 106,000 stations, and the normal force consists of a Wire Chief, Assistant Wire Chief, eight deskmen and eight clerks. Thirty-seven inspectors are assigned to this territory to care for line and station trouble.

Following is a list of the circuits required for testing in each office, together with the number of conductors used:

No. of Circuits	No. of Conductors
10 Transfer test lines to the "B" board trouble position	40
2 "In," "Out" and "Bridging" main frame test lines	8
8 "Bridging" main frame test lines	16
2 Private line board test lines	8
2 "Tip" and "Ring" test lines to last "A" board position	6
1 Loud speaking telephone circuit	5
1 Extension line to insideman	2
1 Circuit to "B" board trouble position	2
1 Circuit to last "A" board position	2
Total	89

These test lines are routed in different cables, so that in case one cable fails at least one-half of the circuits would remain in service.

In addition to the above, twenty exchange talking lines are connected to the Columbus switchboard for incoming and outgoing business, and the Wire Chief's calling circuits are bridged to the desk.

The desk equipment for the clerical force consists of:

1. A two-position Repair Clerk's desk (see "A" on illustration No. 1), equipped with:
   (a) Six exchange lines.
   (b) One tie trunk to each Commercial office—a total of 3.
   (c) A tie trunk to each local traffic or Information clerical force—a total of 4.
2. A two-position Contract Order Clerk's desk (see "A" on illustration No. 2), equipped with:
   (a) Two exchange lines.
   (b) Four tie trunks to traffic clerks (these are the circuits which also appear on the Repair Clerk's desk).
3. A two-position desk for the cable record and tabulation clerks (see "B" on illustration No. 2), equipped with one exchange line of 2 stations.
4. A one-position desk for the Chief Clerk (see "A" on illustration No. 3). This is the type of desk used for Wire Chiefs' private desks and is equipped with a monitor box containing sufficient jack and lamp equipment for multipleing all lines and signals which terminate on the other clerks' desks. The Chief Clerk may therefore observe service on these lines and be able to pick up any call when

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2. Deskmen "Handling" Installers; Also Desk Equipment of Contract Order, Cable Record, and Tabulation Clerks

necessary. He is also furnished with a line for his own use.

This desk can also be used to care for any abnormal peak in the load on any of the other desks, *e.g.*: Under normal conditions orders to deny and restore service are received by the repair clerks over their tie trunks from the Commercial offices, but during the months of September and October about 3,000 orders to restore service on lines which had been denied for the season were received, and a special clerk was placed at the Chief Clerk's desk to handle this work and relieve the repair clerks of this load, in order that they might continue to give satisfactory service on their other lines.

The two-position desk for the use of the Wire Chief and Assistant Wire Chief is equipped with a monitor box (illustration No. 4), in which are mounted jacks and lamps which are connected to all circuits appearing on the test table. Jacks are also wired to the telephone sets of all deskmen and clerks. The Wire Chief thus has a picture continually before him of the service which is being given by his force, and is provided with an observing service cord so that he is able to observe service on any particular group of lines, or the service being given by any employee.

Talking circuits have been provided between all test table and clerical positions in order that the necessary conversations between members of the force may be carried on without confusion.

The cards are filed in two specially designed card filing tables (see "B" on illustration No. 1), each with a capacity of 43,000 cards. The cards of each central office district are filed together, and, in order to prevent misfiling, tabbed cards are used. In order to facilitate finding cards when not in the file, a colored band, one-eighth inch wide, is printed at the top and bottom of each card, a distinctive color being used for each central office. This has been found to be a great time-saver, as it is necessary to look only at cards of the color corresponding to the central office in question.

A 600-pair tie cable has been installed between the Columbus main frame and the distributing frame at the test table (see "A" on illustration No. 5), and battery, ringing current, and coin collect and return current are supplied to the fuse panel (see "B" on illustration No. 5), from the Columbus central office power plant. Switches are installed in these leads in the rear of the fuse panel, so that the equipment may be cut "dead" when not in use.

The relays are mounted on the relay rack shown at "C" in illustration No. 5.

Illustration No. 6 shows the rear equipment of the first section of the test table.

Wiring has been installed for an ultimate equipment for ten offices, and the whole equipment was installed by the switchboard wiring force of the Plant Department.

A brief outline of the method used in handling the work may be of interest.

The work is divided among the eight deskmen as follows:

Positions 1 and 2 handle installers.

Positions 3 and 4 handle testing.

Positions 5 to 8 handle inspectors.

Positions 9 and 10 are reserved for emergency loads.

The lines are so arranged that each man has terminating at his position certain lines for which he is primarily responsible, and also lines multipled from the positions either side of him, so that he can help out either neighbor, if necessary. The work may, therefore, be shifted one position either way, if occasion arises, without any change in cross-connections being made. This allows the force handling any particular kind of work to be increased by one man at any time. This is sufficient for any ordinary peaks in the load.

Subscribers' Line Trouble

Subscribers reporting equipment trouble are connected with the repair clerks, who remove the cards from the file and make necessary entries thereon, while obtaining the details from the subscribers, as all of the 86,000 cards are accessible to each repair clerk.

3. General View of Equipment Fully Manned for Handling the Peak Load of October, 1914

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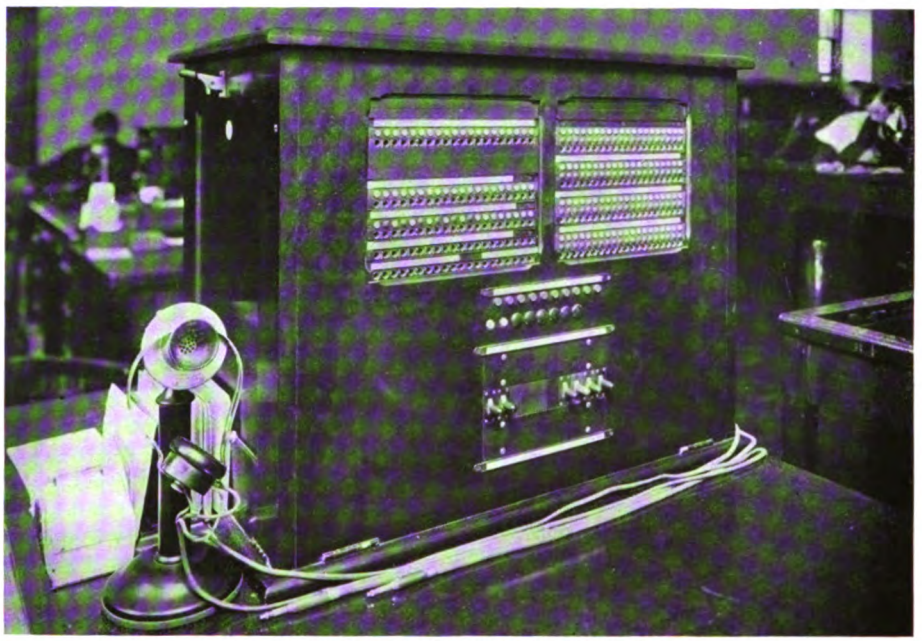

4. Apparatus Box on Wire Chief's Private Desk

Cards of lines which do not require further testing are at once placed in the pigeonhole on the test table, which is assigned to the inspector to whom the trouble is to be given. Cards of lines requiring further test are given to a tester who makes the necessary tests before cards are distributed. Troubles discovered by or reported to the Traffic Department are by them reported to the repair clerk, who handles them in the same manner as those received direct from the subscriber.

Inspectors call the Wire Chief over exchange lines unless they desire a test on a line, in which case they request the "A" operator to connect them over an "inspector's test" line, of which there are three from each office. The "A" operator then passes the call over a circuit to the trouble operator at the last "B" position and orders the line placed on "inspectors' test" line. This "inspectors' test" line terminates in a plug at the trouble operator's position and a jack with associated guard and subscriber's signals at the desk position or positions caring for the particular district. The deskman answers the call and is able to test with the inspector without the delay formerly experienced, due to clearing the line in the answering jack and ordering it up on a test cord.

Position and Trunk Trouble

Position and trunk trouble is reported to the local insideman direct by the Traffic Department and is cleared and recorded on his daily report, from which it is tabulated by the clerk at the Central desk. One tabulating clerk tabulates all trouble for the six offices, which insures uniformity in tabulation for the whole group.

Contract Orders

The "G. R." copy of all contract orders is sent to the local Wire Chief and after the central office work has been completed the order is forwarded to the Traffic Department and filed, pending advice from the Central desk that the order has been executed.

The "W. W." copy of all orders is sent to the Central desk and is filed pending the request of the installation force for an O.K. on same.

Three "installers' test" lines similar to the "inspectors' test" lines described above are equipped from each office and installers receive all O.K.'s on orders by calling the Wire Chief over these lines. When the order is O.K.'d, the deskman places it in a receptacle on the Contract Order Clerk's desk, which is located immediately behind him as shown in illustration No. 2. The Contract Order Clerk notifies the Central Office Traffic Clerk and the Information Bureau Clerk over the trunks, and makes out the subscriber's line card, dates and signs the order and passes it to the Cable Record Clerk on the next desk, who makes the entries in the cable book. This Cable Record Clerk handles all back-tap and transfer sheets, in addition to the cable record portion of the contract order work. Upon receipt of the notification, the Central Office Traffic Clerk releases the General Record copy in the regular routine.

All Restore Service orders are given to the clerk at the Central desk over the tie trunks by the local Commercial Managers and the cards are given to the deskman who has the work executed and returns the cards to the clerk who notifies the Traffic Clerk over tie trunks.

Protection and Season Denials

All Protection and Season Denial orders are received and handled by the Wire Chief at the Central desk.

Testing in Connection with Cable Work

One copy of all back-tap and transfer sheets is sent to the local Wire Chief and one copy to the Central desk. The testing in connection with small transfers is done by the Central deskman. In these cases the construction man gives a list of the lines to be tested to the frameman, who transmits it to the deskman via the loud speaking circuit and the deskman reports the result of the test in the same manner upon completion. When a large amount of testing is required, arrangements are made to have it handled locally.

Notice of the beginning and completion of cable work is given to the Repair

5. Distributing Frame, Fuse Panel and Relay Rack

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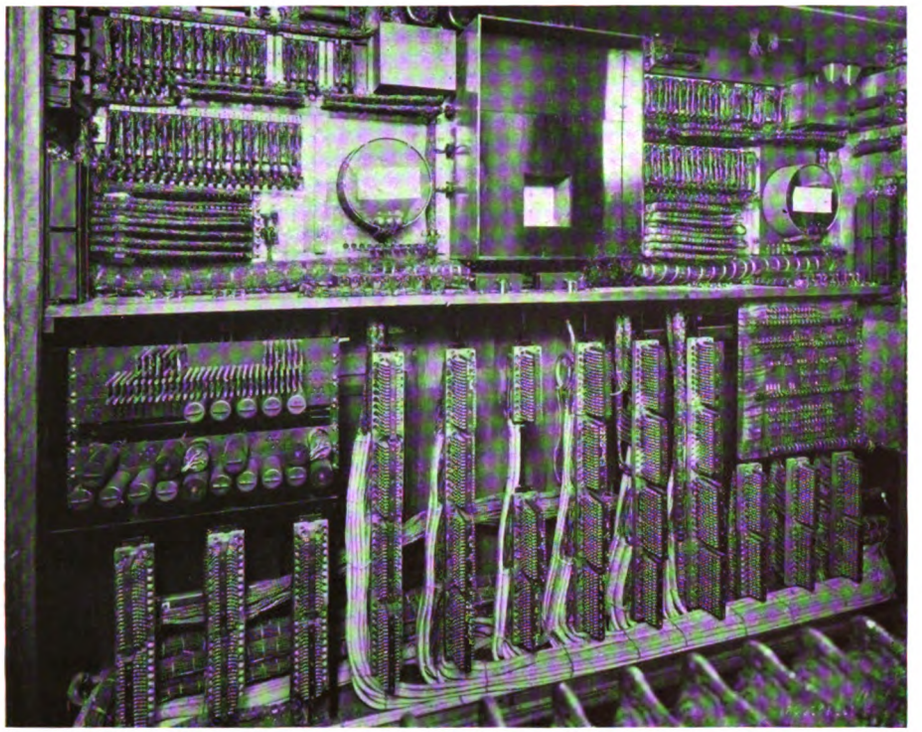


6. Rear Equipment of First Section of Test Table

Clerk, who has it recorded on the blackboard, as shown in illustration No. 2, which is visible to all deskmen, and any trouble developing. due to this work, can be referred to the splicer or workman without delay.

The responsibility for the work is divided between the Wire Chief of the Central desk and the local Wire Chiefs as follows:

The Wire Chief of the Central desk is responsible for the supervision of the work of his force, for following up all trouble conditions and for advising local Wire Chiefs of excessive or preventable central office troubles.

The local Wire Chief is responsible for supervision of the central office force, the maintenance of the central office equipment and the making of routine tests and inspections, central office transfers, etc.

It is planned to leave at least two positions of Wire Chief's desk equipment in each office for emergency purposes, and any office can be decentralized at any time by simply sending the cards for that particular office to the local Wire Chief and furnishing the necessary clerks and deskmen. This would be required only in a serious emergency, such as a general cable failure.

The payroll of the Wire Chief of the Central desk is pro-rated between the offices in the group according to the number of lines in each district.

The work can be handled by 10 deskmen and 12 clerks, whereas 18 deskmen and 18 clerks would be required to handle it if the offices had not been centralized. This represents a saving of 40 per cent. in the force.

Illustration No. 7 gives a view of a portion of the locker and retiring room, which is comfortably furnished for the use of the men during their relief and lunch periods.

The centralization has, as was to be expected, brought to light many cases of unnecessary work in connection with the various routines, which were not noticeable in single offices, and these have been eliminated, all offices receiving the benefit.

Studies are being made of all routines, and other changes are under consideration, which, if adopted, will result in further large savings.

Numerous calls for information, or for giving instructions, have also been eliminated, as in many cases these can be handled by one call instead of four, so that all departments are benefited.

Wire Chief C. N. Kirton is in charge of this equipment and all members of his force have shown marked interest and coöperation in working out the details of the experiment, making many valuable suggestions. Great credit is due them for the way in which they handled the work under very trying circumstances during the transition stage at Murray Hill and during the first few months at the present location.

Working Principles

THE guide book to business success received an additional chapter when a man who has built up a great fortune and with it a name for undoubted business ability sat down to tell people how he did it. Here are some of the principles that worked well for him:

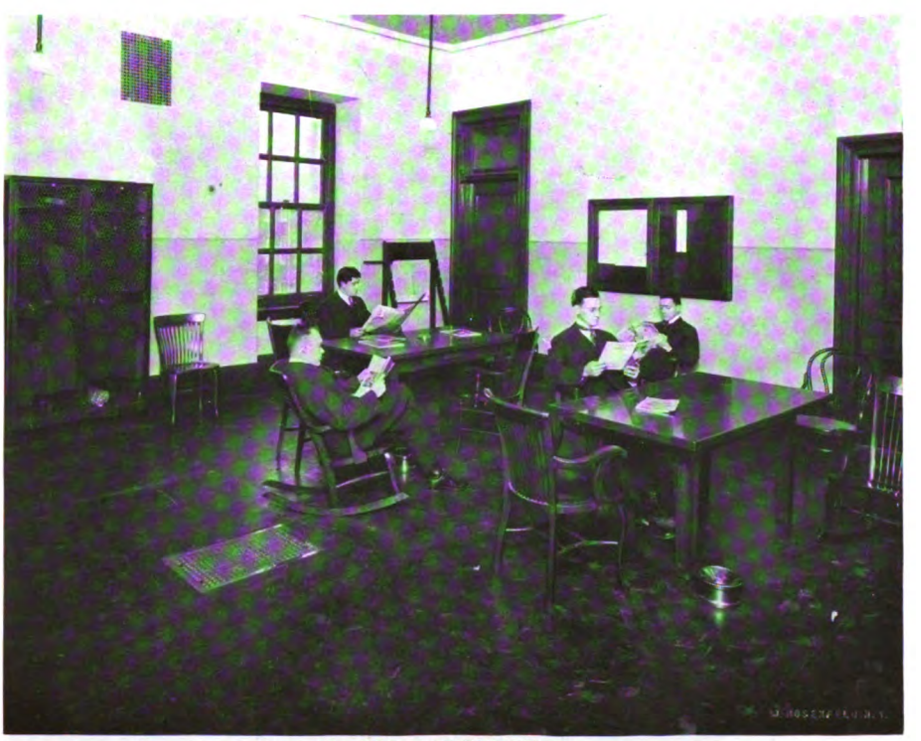
"Make up your mind to work at something really worthy of work, and work hard."

"The sure way to make money is to save money, and to use what you save."

"Don't be afraid of long hours or constant attention to your work."

"Work, where the interest of the man who works is centered, becomes a source of real gratification, of honest pleasure and accomplishment."

"Look at things with optimism in your heart."



7. Locker and Sitting Room

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A Personal Tribute to Dr. Bell

THE wonder of the achievement in talking across the continent has attracted so much attention that even those who were opposing Prof. Alexander Graham Bell in the early days are moved to pay him tribute.

The following letter and appreciation from Mr. W. D. Baldwin, one of the opposing counsel during the litigation which followed the invention of the telephone, are testimonials both to the telephone and to the personal qualities of the inventor.

WASHINGTON, D. C., January 27, 1915.

THE CORDOVA,

Theo. N. Vail, Esq.,
President American Telephone & Telegraph Co., New York City.

DEAR SIR:—

I am eighty years of age, in feeble health and retired from business. The last and greatest triumph of Telephony impresses me with the fact that it is my duty to put on record a tribute to Mr. Bell, which relates to a characteristic not so well known as his merit as an inventor, but the memory of which should be borne in mind as a contribution to his greatness and goodness as a man.

Very respectfully,
Your obedient servant,
(Signed) W. D. BALDWIN.

Alexander Graham Bell

The Inventor of the Telephone

An Appreciation

By An Old Opposing Counsel

THE crowning achievement of speaking telephonically from ocean to ocean, just accomplished, calls for a tribute from one who knows as to some personal characteristics of its author.

My acquaintance with Mr. Bell began in 1874 as opposing counsel in certain litigation in the United States Patent Office, concerning Harmonic Telegraphy and Telephony. Mr. Bell was then a young, poor, and little known professor of vocal physiology. The knowledge incident to this science was of material assistance to him in the development of Telephony. Much could be said on this subject did time permit, but I forbear. In the ensuing litigation, which lasted for years, I came in frequent contact with Mr. Bell, but our adverse attitude never interfered with the friendship and esteem I have acquired for him as an honest, upright man. He was straightforward and direct in his testimony as a witness, even going beyond his associates in his frankness in stating facts apparently militating against his own case. His increasing fame and success, as the years went by, made no difference and he has remained the same simple, conscientious, courteous gentleman to this day. It is this characteristic of his that strikes me as particularly worthy of commendation. His fame as an inventor fills the world, but his consistent conscientiousness is equally worthy of remembrance. Circumstances have prevented the cultivation of a much desired intimacy, but I shall always be proud of the long continued, friendly acquaintance which has always existed between us.

(Signed) W. D. BALDWIN,
January 27, 1915.

Pen and Inklings

By Oliver Herford, in Harper's Weekly

Hello, Frisco!

A Long Distance Wirelogue, February, 1915

New York: Hello, Frisco!

Frisco: Hello! Yes?
Who's that calling?

New York: Can't you guess?

Frisco: The voice is strange and far away.
I cannot place it.

New York: Till to-day
You never heard me speak your name,
Yet I'm an old friend just the same.

Frisco: Old friend? Who are you, anyway?
Why did you call me?

New York: Just to say
"Hello" and pass the time o' day,
Good evening!

Frisco: Same to you, but why
Good "evening" when the sun's still high?
Steeped in his gold my garden lies
Bright as Aladdin's paradise.
I've just been gathering pinks, and roses
And orange blossoms————

New York: Holy Moses!
Here we are talking, you and me,
You underneath an orange tree,
Me shivering in a bank of snow,
Thermometer sixteen below,
Old Sol off on a "business tour,"
Tho' I don't blame him, seeing you're
The business!

Frisco: Stop your nonsense, please!
And don't be such an awful tease.
Tell me your name, sir, right away,
Or I'll ring off————

New York: One moment! Stay!
Put your lips close to the receiver,
Quite close————there!! ————

Frisco: Oh, you gay deceiver!
That smacked of Broadway sure enough.
I know you now, you dear old bluff,
I know you by your coy reserve,
Your shrinking, shy Manhattan nerve,
Who but NEW YORK could make a kiss go
Three thousand miles!

New York: You get me, Frisco!

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The Telephone in Action at the Front

THE use of the telephone in war has developed to an unprecedented degree as the conflict has advanced. To the thoughtful observer this increasing importance of the telephone in conducting the mammoth operations of the war is another reminder of the terrific futility of war. For what the telephone can do in the execution of the manifold details of campaigning it is doing in an incomparably greater degree in furthering the activities of peace in this country. As a business instrument it far exceeds even the great usefulness it has displayed on the battlefield. Although the versatility of the telephone on the battlefield is not comparable with its universal adequacy in the realm of business, so striking are the varied applications of telephone service to the needs of warfare that they emphasize the possibilities of the telephone in all phases of life.

French Telephone Station in the Field. Telephonist at the Threshold of His Shelter

What is known as "Lauscherposten" among the Germans seems to be the last word in the spy system. These are a series of "listening outposts" who approach as near as possible to the lines of the enemy, overhear all they can in regard to the enemies' plans, then telephone this information to headquarters. The officer spots a good hiding place during the day and under cover of darkness goes to it, carrying a telephone instrument and a reel of light wire which is connected with headquarters.

After the Allies discovered that these methods were being employed they paid special attention to all potential hiding places, with the result that the method of subterranean passageways was adopted. When the trenches of the opposing forces came near to each other it was comparatively easy to approach within hearing distance of the enemies' trenches, by means of these underground passages. In this way the "listening outposts" can hear the commands, the conversations among the soldiers, and learn the plans of the opposing forces, without much danger of detection.

The Allies have adopted this system of spying, too, and as a method of meeting the situation, the Germans have forbidden all talking in the trenches.

A letter in *The Electrical Review*, published weekly in London, may perhaps be taken as an index to the enormous demand for telephone service necessitated by modern warfare:

> I have had the following letter from a major of the Royal Field Artillery, at present training new units at Farnborough:
>
> "As perhaps you are aware, this war consists of the employment of the three T's, namely, Trenches, 'Tillery and Telephones. We are very good at trenches; in time we shall make good artillerymen, but they [the recruits] will never make good telephonists unless they get telephones, of which I see no likelihood in the immediate future. Can you suggest any means by which we could be lent, or given any telephones or buzzers, preferably of military design, to further the training of our men? They would be returned to the owners on receipt of the proper telephone equipment from the military authorities, but, as I have already stated, they have none at present to spare. I should be very grateful if you could suggest any means of obtaining these necessary instruments."

That these needs were filled is shown by a letter from the same source published in a subsequent issue of *The Electrical Review*, which, however, goes on to state that the Royal Field Artillery wants two hundred telephone electricians for enlistment. After qualifying in age, term of enlistment, pay, etc., these men must be "capable of repairing telephones and lines under fire."

Grim enough is this brief statement of the requirements. Not only must these indispensable "telephonists" be qualified to endure the hardships and dangers of the regular soldiers—the long marches, and perilous life in the trenches with bombs breaking over and among them, but they must be prepared for still finer tests of courage and endurance. For the work of the soldier telephonist is not simply sitting in the depths of a trench or in a secluded nook under a haymow, while transmitting messages from one part of

French Operator and Telephone "Exchange" in the Trenches

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the battle line to another. The wires have to be laid along the ground or strung through the tree-tops if they can be successfully hidden there; and when disaster comes to the wires from any of the innumerable dangers that are perpetually menacing these guiding nerves of the great army system, one or two men, or at best a mere handful, must go out and repair the line, in full view of the enemy, perhaps, and under the deadly fire of the Krupp guns.

At all costs the line must be repaired and kept in working order, for it is through the pulsing currents borne on these slender wires that the great masses of troops are coördinated. The telephone lines are indeed the nerves of the armies in the field, connecting the muscles with the brain, the trenches with headquarters, and making one compact unit of what would otherwise be a vast aggregation, difficult of adjustment and correspondingly inefficient.

The dangers of the army telephonist's work are extreme, but the satisfaction may be his that the dangers are exceeded by the importance of his foiling peril successfully and preserving intact the all-important telephone equipment.

"Telephone Theology, or What I Learned on My Visit to the Fordham Exchange"

AMONG the subscribers who accepted the invitation of Local Commercial Manager Mahony to visit the Fordham exchange on January 19, 1915, was the Rev. C. W. Petty, Pastor of the Creston avenue Baptist Church, in Fordham.

The Rev. Mr. Petty came to the exchange rather skeptical, but wishing to learn something of the Telephone Company's system. Having been conducted through the exchange by Salesman H. B. Tuttle, who explained the various duties of the different employees and the workings of the mechanical end of telephony, the gentleman left, a strong friend of the Company, convinced that the telephone men were doing their utmost to render the public the best service possible and that the Telephone Company's employees believed and acted on the belief that "Public Service is a Public Trust."

The religious discourses of Mr. Petty are usually based on topics of the day, or on familiar objects which his hearers have seen so often that they fail to see anything wonderful in them. In accordance with this custom, he chose for the subject of his sermon delivered on Sunday, January 31, "Telephone Theology, or What I Learned on My Visit to the Fordham Exchange."

The discourse, of which the following are some of the most salient features, was replete with references to the good work being done by the Telephone Company.

Mr. Petty informed his hearers that, having visited the Fordham exchange at the invitation of the Telephone Company, he was so impressed by what he saw and heard that he wanted to talk about it. Especially noticeable, he said, was the systematic and orderly appearance of the exchange; everybody had something to do and the employees were right on the job and constantly busy. He laid particular stress on the spirit of loyalty and devotion to the Company and its interests, shown by the employees; in fact he had tested the employee who conducted him through the building to find out whether he would criticize the Company's methods, but heard nothing but praise and compliments for the Company from him. He called the attention of his hearers to this spirit of loyalty shown by telephone men to the Company, because, he said, all Christian people should emulate this example and be loyal to their beliefs, and that, as every employee has some definite duty in the Telephone Company, so every Christian has something real to do in the Church. It is the Christian's duty to find the place and task allotted to him and, having found it, to exert himself to perform his work creditably.

The true Christian, said Mr. Petty, should remember that he has at his command a trained and efficient army of telephone employees on duty day and night, ready to respond at a moment's notice to any call made upon him, and should recognize this constant service by being courteous and forbearing in all his dealings with Central.

Mr. Petty said, in closing, that throughout his trip over the exchange there was much of the mechanical and electrical apparatus that he could not fully understand, but that the spirit which pervaded the entire building was one which he could not fail to understand—the spirit of industry and loyalty and service; from this he could appreciate something of what the Telephone Company is trying to do for the public.

E. H. Colpitts . . . . . C. H. Arnold . . . . . S. H. Browne . . . . . C. A. Robinson . . . . . F. B. Jewett . . . . . F. B. Driscoll . . . . . K. W. Waterson . . . . . L. F. Morehouse . . . . . E. F. Sherwood . . . . . B. Gherardi . . . . . J. J. Carty . . . . . G. K. Thompson . . . . . G. A. Campbell . . . . . R. F. Esterbrook . . . . . W. L. Richards . . . . . J. A. Barrett . . . . . C. E. Scribner . . . . . O. B. Blackwell . . . . . F. L. Rhodes . . . . . T. Shaw—Top . . . . . H. S. Osborne—Lower . . . . . J. L. McQuarrie . . . . . H. S. Warren . . . . . W. E. Farnham . . . . . F. P. Valentine . . . . .

SOME OF THE ENGINEERS WHO HAVE MADE THE TRANSCONTINENTAL LINE POSSIBLE

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Mr. B. Gherardi, Engineer of Plant, A. T. & T. Co., will be the speaker at the Main Society meeting in New York, March 16.

Mr. J. S. Wiley, General Auditor, and Mr. P. O. Coffin, Auditor, New York Telephone Company, will be the speakers at the Sectional meetings in Albany, March 16; Syracuse, March 17; Rochester, March 18, and Buffalo, March 19.

Main Society

THREE hundred and ninety-seven members of the Telephone Society of New York attended the 158th meeting of the Society at the United Engineers' Building, on Tuesday evening, February 16, 1915. Seven applications for membership, approved by the Membership Committee, were presented and the applicants were unanimously elected members of the Society. After other business of the meeting had been transacted, President Jewett introduced the speaker of the evening, Captain J. B. Adams, of the United States Forest Service.

Captain Adams addressed the Society on the subject: "Use of Telephones in the National Forests," and by word and picture he took his audience on an interesting trip through the immense tracts of timberlands that are under the supervision of his department.

Captain Adams prefaced his story of the actual uses of the telephone in the Forestry Service by a recital of the conditions the United States Forest Service is forced to meet in protecting the valuable timberlands that spread over an area of approximately 165,000,000 acres. Fire, Captain Adams said, is the element that is feared above all other things, and because of the enormous area of forest land to be patrolled and the inaccessible nature of the country in which fires are likely to occur, the telephone has become an important factor, not only in spreading the alarm and giving the location of a timber fire, but in marshaling forces and materials to fight it with the least possible delay.

Captain Adams's description of the telephone material used in the service lines of his department, and of the problems encountered in the wiring of a wilderness, was full of interest for all telephone men, and his paper was favorably received.

At the conclusion of the paper the meeting adjourned to the fifth floor, where cigarettes, cigars, the Blue Bell Orchestra and handshaking provided a fitting end to a pleasant evening.

Hudson Section

THE 20th Meeting of the Hudson Section was held Thursday evening, February 25. Although the night was very stormy a large number of members attended. The paper by Mr. F. L. Flanagan, District Traffic Chief, Hudson Division, on the subject: "What is a Traffic Irregularity and Why," proved to be a most instructive and valuable paper. Among other things Mr. Flanagan said:

> The term Traffic Irregularity is not generally understood by telephone men. You have often wondered what mysterious kind of an animal it was. Many of you no doubt have guessed a wrong answer. I fear some have concluded it was a necessary and vital feature of the telephone service, while others have supposed that anything that seemed "too much trouble" for the Traffic Department, or anything that some traffic official at some time just didn't happen to feel in a mood to do, has been stamped as a Traffic Irregularity, and that shuts off all further discussion.
>
> The function of a telephone company is to provide the apparatus to enable people to communicate with each other—not to sell a commodity. Strictly speaking, our business is to provide upon request the means whereby a person in one location may communicate orally by wire with a person in another location—that and no more.
>
> The prime duty of the Traffic Department is putting in motion the instrumentalities that permit people to talk to one another.

The speaker then went on to explain that the performing by the Traffic Department of any other services than those ordinarily necessary to the completion of a connection is in the nature of an irregularity. He illustrated this by numerous instances of requests by subscribers for service or information which it is not in the province of the Telephone Company to furnish, and other departures from routine which are justified by circumstances but are not to be accepted as precedents. Telephone service must be the same for all subscribers, and it would be irregular, discriminatory, and, in some cases, illegal for the company to render service to some subscribers that it cannot render to all.

Following the paper there was lively discussion participated in by Messrs. Hills, Peck, Crocker, Taylor, Allerton, Bull, Anderson, Miller, Clearwater, Henkel, MacNabb, Arland, and Powley. Mr. I. H. Griswold, of the Mountain Home Telephone Company, also made some interesting remarks.

District Meetings were held at Glens Falls on February 4, at Poughkeepsie on the 23rd, and at Kingston on the 24th. At these meetings Mr. E. H. Powley, Division Plant Superintendent, gave his paper entitled: "Five Years in the Hudson Division."

Western Section

THE Western Section held its February meetings at Buffalo and Rochester on the 18th and 19th respectively. Mr. E. H. Powley, Division Plant Superintendent, Hudson Division, was the speaker for both meetings. The subject of his paper was "Five Years in the Hudson Division."

The paper at all points was very interesting and instructive. Each statement in connection with the various branches of the work was shown on a large tabulated sheet so that it could be clearly and easily understood.

The meetings at Buffalo and Rochester were well attended. At the Buffalo meeting comments were made upon the paper by Messrs. P. O. Jacobs, H. W. Gaul, H. I. Dodson, V. C. Mott, F. C. Waite, C. H. Thomas, and J. W. Banks, and at Rochester by Messrs. P. O. Jacobs, W. J. O'Hea, H. W. Benedict, and R. M. Bruce.

Central Section

INSTEAD of the regular business meeting of the Central Section in the month of February, the annual dinner of the Section was held on Tuesday evening, February 16.

Mr. A. L. Fox, chairman of the Central Section, acted as toastmaster, and Mr. Leo Pryne was the first member to be called upon. He responded by telling the Society what Utica thought of Syracuse in general, and Mr. J. H. Guilfoyle defended the Syracuse crowd and had a few words to say about Utica. Mr. W.

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M. Hollenbeck followed Mr. Guilfoyle with a few remarks about Elmira.

After Mr. Hollenbeck's talk, the tables were cleared away and an informal program of songs and monologues followed. A feature of the evening was a number of popular songs sung by the entire membership, including the following parody on "Tipperary":

We are loyal members of the great Bell family,
We are for the watch-word, which is now "Economy,"
It is to our interest, economy to talk,
For every fellow in the bunch has taken up some stock.

CHORUS

It's a long time before it's paid for,
It's a long time to stick,
Nearly four years' watchful waiting,
If we know arithmetic!
Good-bye two bucks monthly,
Two for every share,
It's a long, long time before it's paid for,
But it's on the square.

When our stock is paid for, every man will be a king,
We'll discharge our officers, and run the whole blamed thing;
We'll elect our bosses then and make them all go slow,
And if they try to fire us, we'll tell 'em where to go.

This number was repeated several times during the evening's entertainment and each time responded to several encores. Mr. John Pryor, of the Plant Department, Herkimer, entertained the Society with a monologue.

The entertainment closed about 11 P.M., and it was voted one of the pleasantest evenings of a similar nature ever held in Syracuse.

LOO KUM SHU

Manager of Chinese Telephone Exchange of San Francisco, Talking with a Fellow Countryman in Boston

Next Pioneer Convention at San Francisco

THE Fifth Annual Convention of the Telephone Pioneers of America will be held in San Francisco, Tuesday, Wednesday, and Thursday, September 21, 22, and 23, during the Panama-Pacific Exposition.

This was decided at a recent meeting of the Executive Committee, and the following were appointed a Committee of Arrangements with authority to appoint the necessary sub-committees: George E. Macfarland, president, The Pacific Telephone & Telegraph Company, San Francisco; A. S. Hibbard, American Telephone & Telegraph Company, Chicago; and Gerard Swope, vice-president and general sales manager, Western Electric Company, New York City.

The opening of the transcontinental telephone line makes it possible to take the trip and still remain in communication with home and business. A tentative itinerary has been prepared for parties leaving New York, Boston, and other Eastern cities, via Buffalo and Chicago, where it is planned to join other parties meeting there and traveling by special train to the Pacific Coast. All who had the privilege of the trip from Richmond to Old Point Comfort by boat when the last convention met, will appreciate the delights afforded by the informality and associations of traveling together in a party.

The tentative itinerary includes visits to Omaha, Denver and Salt Lake City, with stops and side trips en route to San Francisco.

After the convention and visits to the Exposition in San Francisco, it is planned to visit Los Angeles and other near-by points. The return route will be optional. A definite itinerary at a very low rate, including all expenses for a trip occupying about three weeks, will be worked out in ample time for announcement during the summer, but this suggestion should whet the appetite of every Pioneer and many of their friends. It would be very opportune for telephone employees who are not members of the Pioneers' Association to join this party and visit the Exposition next September.

Mr. R. H. Starrett has been appointed secretary of the Pioneers' Association, in consequence of the unfortunate, prolonged illness of Mr. Henry W. Pope. Mr. Starrett's address is 15 Dey street, and he will be glad to answer any inquiries, by mail or telephone, concerning the trip to San Francisco.

THE TEACHER—Now, children, listen to this. Thomas Campbell, the famous poet, once walked six miles to a printing office to have a comma in one of his poems changed to a semicolon. Why did he take all that trouble?

BRIGHT BOY—'Cause he didn't have no tellyphone.—*Cleveland Plain Dealer.*

Closing a Difficult Case

A NEW concern in Manhattan started business about two weeks before the closing of the February Directory. A representative called at one of our local commercial offices and signed a contract for direct line telephone service, which was duly installed. This occurred also just prior to the opening of a new exchange district, with the result that simultaneously with the issue of the new Directory the subscriber was given a new telephone number and central office designation. Immediately thereafter the subscriber protested vigorously against the change, stating that a large quantity of letterheads and other printed matter had been prepared with the old telephone number thereon, and that all of this would be wasted if the number were changed; moreover, even if he were given back his old number, the Directory would not agree with it and there would be confusion on that account.

The subscriber admitted that he was not told what his telephone number would be, although he inquired and was informed that the Company did not guarantee any numbers and that it was not advisable to print call numbers on stationery. Nevertheless, he took the number from the order ticket which was attached to his instrument when it was installed. He finally conceded that nobody was responsible for the error but himself. It required quite a little diplomacy on the part of Mr. M. K. Kuhn, of the Spring commercial office, who handled the case, but he did it so successfully that the subscriber wrote a letter to the Company afterwards, stating that the whole matter was settled satisfactorily, and withdrawing all claim, and also signed a new contract for private branch exchange service with one additional line and five additional stations, and a material increase in the number of local messages. This was certainly turning a kicker into a booster, but, best of all, the subscriber has reached a better understanding of the attitude of the Company towards its patrons and the value of adequate telephone facilities.

A Recipe for Good Operating

Take a quantity of *cheerfulness* and let it simmer without stopping. Put with it a brimming basinful of *energy*, then add a full measure of *thought for other operators*. Mix into these a heaping tablespoonful of *kindness*. Flavor with essence of *loyalty*. Stir well together and then strain off any grains of *selfishness*. Let the whole be served with *diplomacy* sauce and *fruit of the Bell spirit*.

G. J. HOLLAND,
Assistant District Traffic Chief,
Syracuse.

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Employees Become Stockholders

Invest Savings in Stock of A. T. & T. Co.

THE offering of stock of the American Telephone & Telegraph Company on easy payments under the Plan recently announced was a great success as far as the employees of the New York Telephone Company are concerned. More employees who were eligible have subscribed for stock and more shares have been taken than was anticipated by the most optimistic.

This is another demonstration of what has always been felt, that the employees are both loyal and interested in the business which they are now given an opportunity to make their business in the double sense of ownership and service.

The mere announcement was made that the opportunity would be given to subscribe, with the conditions concerning those who were eligible and the terms of payment. Equally striking with the result was the expressed desire to obtain stock by a large number of employees who were not eligible.

That so many employees are able and have so quickly taken advantage of the opportunity to invest a portion of their earnings in this way indicates the economic need which the Company met by making it possible for them to do so. Small savings are easily dissipated and are often spent foolishly, even when put aside for future investment. There are many other forms of investment on the weekly or monthly payment basis, such as building and loan associations, Christmas funds, etc., in which many employees are putting their savings, so that in a large measure the takings of stock of the American Telephone & Telegraph Company by those employees who subscribed represent money which the owners—the employees—had no other use for, or could afford to divert to this particular purpose.

This spontaneous and tangible expression of confidence in the Company and its management by those most intimately acquainted with the facts—the employees themselves—is an augury of great import as it affects the public which the Company serves.

Of the total number of employees who were eligible, 50 per cent. became subscribers, and these equal 33% of the total employees of the Company. They took 77% of the total number of shares to which they were entitled, and the average was 2.93 shares per employee subscribing.

A Novel Cut-Over

By M. Greene, L. I. Plant

ON Saturday, January 2, 1915, at 2 P.M. the new Decatur switchboard, consisting of seven "B" and nine "A" sections, and located in the Bedford central office building, Brooklyn, was cut into service.

This cut-over was of particular interest, as the Bedford-Decatur district is the first one in this section of the country having what is called the "random" method of distribution as distinguished from the "geographical" method.

In the random method, as the name implies, there is no boundary line between the districts, and any line may be connected to either of the switchboards. Such an arrangement requires the use of a main distributing frame common to both offices with the subway cables terminated on one side in the usual manner and the lines from each switchboard terminated in their respective sections on the other side.

A cut-over under these conditions cannot be made in the ordinary manner, by removing the heat coils on the lines to be thrown, as there is no change in the outside plant, and the cut must therefore be made between the cable head and the switchboard. The method of procedure is to connect the lines affected from the cable head to the new switchboard and "back tap" them to the old switchboard.

While the Decatur lines were only about 550 in number, the fact that each back tap had to be cut before the sleeving could be removed from the cut-off relays required careful planning in order to accomplish it within the two minute limit set by the Traffic Department for a daylight cut-over.

By experiment it was found that the average frameman could cut about 50 lines per minute. The Bedford lines which were to be transferred to Decatur were therefore looped out from the horizontal side of the main frame and a piece of broad white sleeving run in behind the loops to make them conspicuous. The frame was then divided into eight sections by vertical strips of sleeving and an experienced Insideman assigned to each section. This gave each man from 60 to 70 lines to cut.

On account of the comparatively small number of lines involved it was not economical to connect direct trunks from all offices to Decatur, all Manhattan calls, for instance, being routed through the Jersey Toll Board. As, previous to the cut-over, Decatur numbers were reached over the Bedford circuit, it was necessary that arrangements be made to handle the traffic the new way, the instant the Decatur board was placed in service. All offices affected were therefore notified that the cut would be made at 2 o'clock sharp. Promptly on the hour District Traffic Manager Salmon passed the word to Wire Chief Cone, and for a minute nothing was heard but the clicking of the pliers in the hands of the eight men stationed at the frame. In 65 seconds the job was finished; in 10 seconds more the sleeving had been pulled from the relays and Decatur switchboard was in full operation without a hitch.

Arrangements for handling trouble which were inaugurated at the Stagg cut-over were made in a similar manner for Decatur. An Insideman was stationed at the "Trouble position" on the "B" board, and the operators instructed to report to him over a circuit button all cases of "steady light." Upon receiving a report the Insideman was instructed to connect the line in trouble to a transfer test line connected with the Wire Chief's desk and advise the Deskman, with whom he was in constant communication, of the number of the line. The trouble was then immediately investigated by the Deskman. Only two steady lights appeared after the cut-over, one of these due to a receiver which was accidentally raised from its hook by a book, apparently just at 2 o'clock.

As all trunks and calling circuits had been previously cut in and tested and retested, no trouble was expected from this source, and none was experienced.

Bedford and Decatur switchboards have a common terminal room and are handled, of course, from one Wire Chief's desk. Being, as it were, an inside cut-over, the whole job was handled by the Equipment Department. To accomplish it without an error required very careful supervision and checking of records, and Wire Chief Cone is to be congratulated upon the results. Decatur and Stagg will rank together as the two cleanest cut-overs Long Island has ever witnessed.

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Telephone Manners

A Plain Talk By an Operator to Other Employees

IT is a curious fact that some people have several sets of manners, and that the one used at the telephone is often not the most creditable. The fact is often overlooked that, while the telephone itself may be impersonal, "the other end" is not. The insistent ringing of the telephone bell is not, of course, the most nerve-soothing sound in the world, but good manners are worth nothing if they are not good for all occasions. The person with really good manners does not wait to ascertain who is at the other end of the line before deciding whether or not to be polite. One of the most revealing things in our modern life is the sight of a person rushing in perfect wrath to a telephone, snapping out a "Hello, what is it," and suddenly dropping into bland and honeyed accents.

Every telephone employee is a telephone user. We are the people, then, to emphasize by our own conduct the precept of telephone courtesy. In communicating with others in the Company, as well as with persons outside the telephone business, we must be the leaders in carrying into effect the doctrine of telephone courtesy, *not for occasions but for all time.* We can help to establish the universal practice of entire politeness in the use of the telephone if we ourselves consider courtesy as indispensable as the telephone itself.

Every one desires happiness, yearns for it, strives for it. Yet it is within the reach of all who will learn to make much out of little. Any child teaches the secret of happiness in his power to "make believe," to manufacture sheer happiness out of a few spools on a string, a handful of paper dolls, or a sandpile. Some people require diverse and expensive ways of taking pleasure, but others find joy in watching a plant grow, or a bird build its nest; in looking at a sunset; in seeing as much of this wide world as can be viewed from an office window; or in treating the person at the other end of the telephone wire as though the person were a respected friend. Too often the telephone user forgets the small chances to find or to give happiness. Too often he fails to think of the operator who rang the bell, and cares little how he speaks until he knows who the calling person is.

What is there to be gained by impatience? Enthusiasm, on the other hand, is an asset. Furthermore, it is contagious. If one person has it, before long all whom he comes near will have it. If the man who made the first motor-boat had not been enthusiastic we might be using sailing vessels now. For the same reason we might have stage coaches instead of motor cars, candles instead of electric lights, and a hundred primitive makeshifts instead of our twentieth century conveniences. If a person is selling pins, books, or anything else, he may canvass, he may advertise, but neither the canvassing nor the advertising will sell. Why not give out enthusiasm over the telephone? It takes an operator but a very short time to become accustomed to the different voices. She soon knows each one. Which voices does an operator prefer to work for, and to answer, and why? If all who use the telephone gave out their enthusiasm, the operators who serve them would soon show their appreciation. The user of the telephone would enjoy his service far better if he took that one small chance to give and receive cheerfulness and enthusiasm simply by the tones of his voice. The opportunity is afforded him, if he thinks of Central when he takes down the receiver and does not regard his telephone as simply the instrument and nothing more.

Safety lies in service, and expression must equal impression. If one studies he must also create, write, teach, or give out in some way the results of his study. If great joy has come, let it be passed along, and thus be doubled and redoubled. Every one is the steward of the gifts the gods have given him and he answers for their use with his life. Let each one make that life one of loving kindness and goodness, one that can be looked back upon without a frown. In using the telephone an opportunity is afforded to help in some measure to realize this ideal. Let us prove that the telephone can be made a companion, and a pleasant one. It is up to the telephone user himself. Let him learn to like and respect the one who completes the connections, by being kind and not cross, and by sending on that happiness which he is himself enjoying, to all who hear his voice reaching out over the wire in clear and cheerful tones.

When the day comes, which has been promised, when the person at the other end of the telephone will be visible as well as as audible, "telephone manners" may change. Meanwhile, we can each do our part toward establishing the truth that there is really only one way to be polite.

(Miss) Anna Belle Simpson,
(Operator), Geneseo, N. Y.

Pole Line Items With Which Employees Should Be Familiar

By C. F. Mortimer,
Supervising Clerk, Construction Department, L. I.

PAUSE a few moments—read the opposite page, and become, in a general way, better acquainted with the various pole line material units involved in the outside plant. These, you will find, are more numerous than at first anticipated. In addition to the costly ones, such as poles, anchors, cable, etc., with which most of us are familiar, there are a number of miscellaneous units more or less unknown, especially to the departmental clerical forces, throughout the organization. This is due to the fact that these particular employees have never had an opportunity like that of the field force to view these parts at close range, or even through the camera.

In the performance of their duties the supervisory force frequently mentions and refers to these small units—in fact a number of clerks are constantly compiling figures appertaining thereto without the least conception or knowledge of what the units are. These miscellaneous units, while inexpensive individually, nevertheless are absolutely essential and perform important functions in present day construction and maintenance. The units are shown collectively, and indexed so that each unit, its designation, etc., may be readily associated.

The members of the field force can easily see that the loss in dollars and cents would be considerable were small quantities of these items abandoned in the field upon completion of each job; therefore, all employees should familiarize themselves with these miscellaneous units, guard against waste, etc., and thereby increase their efficiency. The Company will, likewise, be affected, not alone from a plant but also from a service standpoint as the time consumed in adjusting omissions, etc., on disbursement and recovery tickets and reports would be decreased, the number of telephone calls reduced, and the time saved utilized to advantage on other work.

The "Stuff" of Life

An advertisement of the New York Telephone Company, which appeared in December, 1901, read as follows:

Telephone Service saves time. Time is the stuff of life. Have telephone service at your house as well as at your office and save time at both ends of the line.

The definition of "time" and the argument are as true to-day as fourteen years ago.

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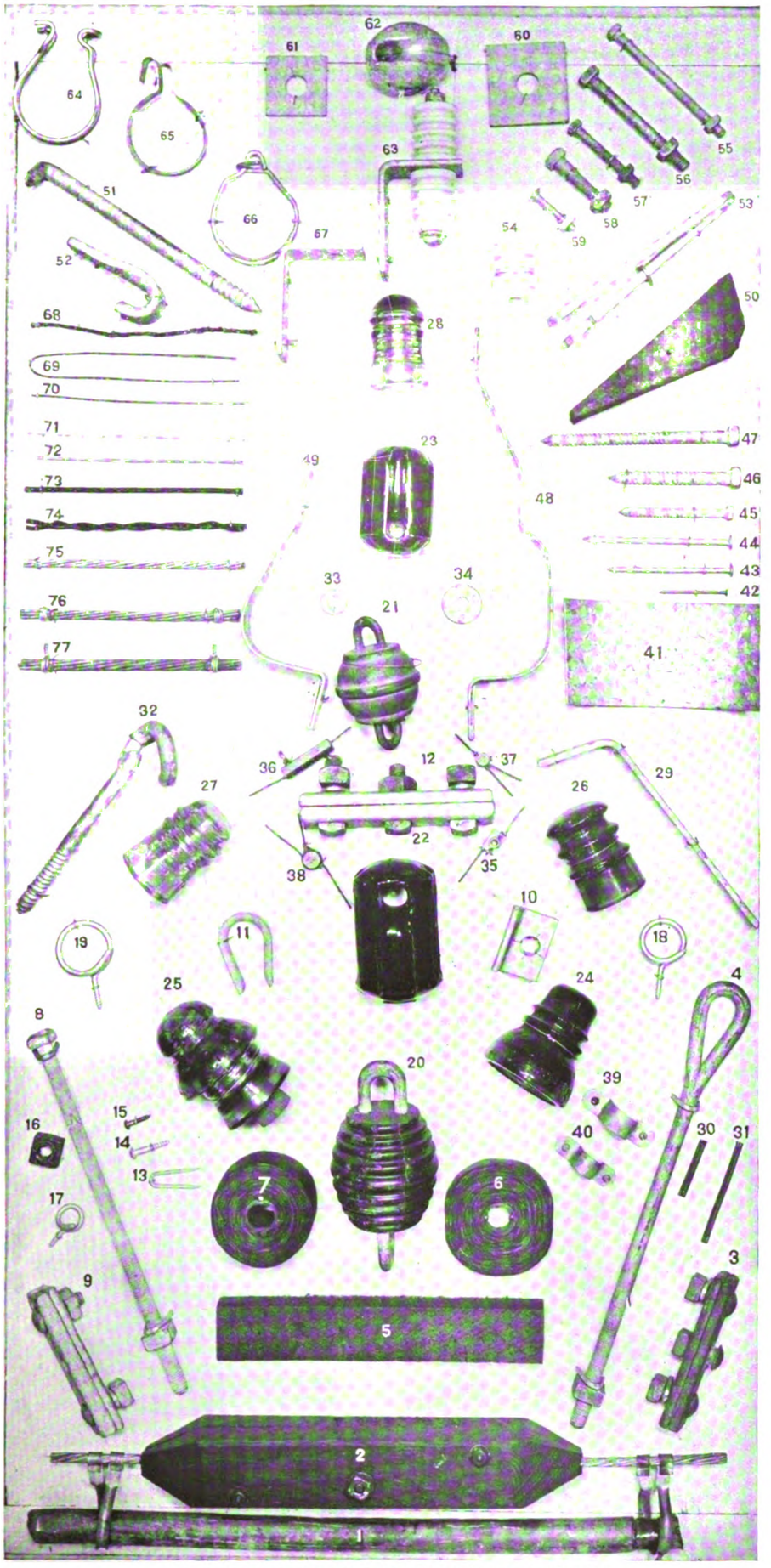

Pole Line Items with Which Employees Should be Familiar

Index Number	Designation
1	50 Pr., 19 Ga., Exchange Cable
2	Tree Guard
3	3 Bolt Guy Clamp
4	18 Inch Eye Bolt
5	Wooden Tree Block
6	¾ Inch Black Friction Tape
7	2 Inch Black Friction Tape
8	14 Inch Crossarm Bolt
9	3 Bolt Rolled Steel Suspension Clamp
10	1 Bolt Rolled Steel Suspension Clamp
11	½ Inch Galv. Guy Thimble
12	Special 3 Bolt Guy Clamp
13	Galv. Guy Staple
14	1½ Inch No. 14 R.H. Galv. Iron Wood Screw
15	1 Inch No. 10 R.H. Brass Wood Screw
16	⅝ Inch Extra Crossarm Bolt Nuts for Cut Thread Bolts
17	Galv. Bridle Ring, Style E
18	Galv. Bridle Ring, Style C
19	Galv. Bridle Ring, Style A
20	No. 10 Electrose Strain Insulators
21	No. 7 Electrose Strain Insulators
22	No. 2 Porcelain Strain Insulators
23	No. 1 Porcelain Strain Insulators
24	Double Petticoat Glass Insulators
25	Transposition Glass Insulator
26	Twisted Pair Glass Insulator
27	Toll Line Glass Insulator
28	Pony Glass Insulator
29	Brace for Wooden Cable Term.
30	14 N.B.S. x 14 N.B.S. Double Tube Copper Sleeve (Half Sleeve)
31	14 N.B.S. x 14 N.B.S. Double Tube Copper Sleeve (Full Sleeve)
32	Galv. Tree Hook
33	⅜x1 Inch Galv. Washer
34	½x1½ Inch Galv. Round Washer
35	Test Connector
36	Test Connector
37	No. 2 Bridging Connector
38	No. 3 Bridging Connector
39	No. 3 Galv. Cable Strap
40	No. 2 Galv. Cable Strap
41	Strain Plate
42	8D Common Wire Nail
43	30D Common Wire Nail
44	50D Common Wire Nail
45	⅜x4 Inch Commercial Galv. Drive Screw
46	½x4½ Inch Galv. Drive Screw
47	½x6½ Inch Galv. Drive Screw
48	No. 1 Safety Strap
49	No. 2 Safety Strap
50	Wooden Pole Step
51	Spikehead Pole Step
52	Galv. Guy Hook
53	Galv. Reinforcing Hook
54	4 Groove Porcelain Insulator
55	⅜x5½ Inch Galv. Machine Bolt
56	½x4¾ Inch Galv. Machine Bolt
57	⅜x3 Inch Galv. Machine Bolt
58	½x2½ Inch Galv. Machine Bolt
59	$\frac{5}{16}$x2 Inch F.H. Galv. Stove Bolts
60	⅞x3x$\frac{3}{16}$ Inch Thick Black Com'l Square Washer
61	¾x2¼ Inch Galv. Square Washer
62	Galv. Strand Connector
63	Iron Pole Bracket (Fully Equip.)
64	2½ Inch Krips Wright Aerial Cable Ring
65	2½ Inch Galv. Aerial Cable Ring
66	3 Inch Bonita Aerial Cable Ring
67	Galv. Iron Pole Bracket
68	3 Ply Houseline Marline
69	No. 14 N.B.S. Copper Tie Wire
70	No. 14 N.B.S. Bare Copper Wire
71	No. 14 B.W.G. Galv. Iron Wire
72	No. 10 B.W.G. Galv. Iron Wire
73	No. 12 B.&S. Weatherproof Copper Line Wire
74	No. 17 Copper-Steel Outside Twisted Dist. Wire
75	No. 12 B.W.G. Guy Strand
76	No. 11 B.W.G. Steel Suspension Strand
77	No. 9 B.W.G. Steel Suspension Strand

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1878—1915

THE completion of the Transcontinental Telephone Line brings strongly to mind the prophetic vision of Dr. Alexander Graham Bell as expressed by him in 1878.

At that time it was almost impossible to convince anybody outside the small, devoted band of faithful zealots, that there was anything practical about the telephone, but Dr. Bell not only saw its practical uses but actually described many of the steps by which they have become possible. The technical difficulties in the way for many years seemed insurmountable, but the wonderful organization developed under Mr. Vail actually has done more than Dr. Bell ever dreamed of.

This is why the following address by Dr. Bell at Kensington, England, on March 25, 1878, is so interesting at the present time.

To the Capitalists of the Electric Telephone Company:

It has been suggested that at this, our first meeting, I should lay before you a few ideas concerning the future of the electric telephone, together with any suggestions that occur to me in regard to the best mode of introducing the instrument to the public.

The telephone may be briefly described as an electrical contrivance for reproducing in distant places the tones and articulations of a speaker's voice, so that conversation can be carried on by word of mouth, between persons in different rooms, in different streets, or in different towns.

The great advantage it possesses over every other form of electrical apparatus consists in the fact that it requires no skill to operate the instrument. All other telegraphic machines produce signals which require to be translated by experts, and such instruments are therefore extremely limited in their application, but the telephone actually *speaks*, and for this reason it can be utilized for nearly every purpose for which speech is employed.

The chief obstacle to the universal use of electricity as a means of communication between distant points has been the skill required to operate telegraphic instruments. The invention of automatic printing, telegraphic dial instruments, etc., has materially reduced the amount of skill required, but has introduced a new element of difficulty in the shape of increased expense. Simplicity of operation has been obtained by complication of the parts of the machine—so that such instruments are much more expensive than those usually employed by skilled electricians. The simple and inexpensive nature of the telephone, on the other hand, renders it possible to connect every man's house, office, or manufactory with a central station, so as to give him the benefit of direct telephonic communication with his neighbors, at a cost not greater than that incurred by gas or water.

At the present time we have a perfect network of gas pipes and water pipes throughout our large cities. We have main pipes laid under the streets communicating by side pipes with the various dwellings, enabling the members to draw their supplies of gas and of water from a common source.

In a similar manner it is conceivable that cables of telephone wires could be laid underground, or suspended overhead, communicating by branch wires with private dwellings, country houses, shops, manufactories, etc., etc.—uniting them through the main cable with a central office where the wire could be connected as desired, establishing direct communication between any two places in the city. Such a plan as this, though impracticable at the present moment, will, I firmly believe, be the outcome of the introduction of the telephone to the public. Not only so, but I believe in the future wires will unite the head offices of telephone companies in different cities, and a man in one part of the country may communicate by word of mouth with another in a distant place.

I am aware that such ideas may appear to you Utopian and out of place, for we are met together for the purpose of discussing, not the future of the telephone, but its present.

Believing, however, as I do that such a scheme will be the ultimate result of the telephone to the public, I will impress upon you all the advisability of keeping this end in view, that all present arrangements of the telephone may be eventually realized in this grand system.

The plan usually presented in regard to private telegraphs is to lease such lines to private individuals or to companies at a fixed annual rental. This plan should be adopted by you, but instead of erecting a line directly from the one to another, I would advise you to bring the wires from the two points to the office of the company and there connect them together; if this plan be followed a large number of wires would soon be centered in the telephone office where they would be easily accessible for testing purposes. In places remote from the office of the company simple testing boxes could be erected for the telephone wires of that neighborhood, and these testing places could at any time be converted into central offices when the lessees of the telephone wires desire intercommunication.

In regard to other present uses for the telephone, the instrument can be supplied so cheaply as to compete on favorable terms with speaking tubes, bells and annunciators, as a means of communication between different parts of the house. This seems to be a very favorable application of the telephone, not only on account of the large number of telephones that would be wanted, but because it would lead eventually to the plan of intercommunication referred to above; I would therefore recommend that special arrangements should be made for the introduction of the telephone into hotels and private buildings in place of the speaking tubes and annunciators at present employed. Telephones sold for this purpose could be stamped or numbered in such a way as to distinguish them from those employed for business purposes, and an agreement could be signed by the purchaser that the telephones should become forfeited to the company if used for other purposes than those specified in the agreement.

It is probable that such a use of the telephone would speedily become popular, and that as the public became accustomed to the telephone in their house they would recognize the advantages of a system of intercommunication. When this time arrives I would advise the company to place telephones free of charge for a specified period in a few of the principal shops so as to offer to those householders who work with the central office the additional advantages of oral communication with their tradespeople. The central office system once inaugurated in this manner would inevitably grow to enormous proportions, for these shopkeepers would thus be induced to employ the telephone, and as such connections with the central office increased in number, so would the advantages to householders become more apparent, and the number of subscribers increased.

Should this plan ever be adopted, the company should employ a man in each central office for the purpose of connecting the wires as directed. A fixed annual rental could be charged for the use of the wires, or a toll could be levied. As all connections would necessarily be made at the central office, it would be easy to note the time during which any wires were connected and to make a charge accordingly. Bills could be sent in periodically. However small the rate of charge might be, the revenue would probably be something enormous.

In conclusion, I would say that it seems to me that the telephone should immediately be brought prominently before the public as a means of communication between bankers, merchants, manufacturers, wholesale and retail dealers, dock companies, water companies, police offices, fire stations, newspaper offices, hospitals and public buildings, and for use in railway offices and in mines.

Arrangements should also be speedily concluded for the use of the telephone in the Army and Navy and by the Postal Telegraph Department.

Although there is a great field for the telephone in the immediate present, I believe there is still greater in the future.

By bearing in mind the great object to be ultimately achieved, I believe that the Telephone Company can not only secure for itself a business of the most remunerative kind, but also benefit the public in a way that has never previously been attempted.

AND THE TELEPHONE GIRL IS CALLED IMPATIENT

"Hello, Central! I've just put some eggs on to boil and I find that my clock has stopped. Would you mind ringing me up in three minutes?"

—Exchange

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The TREND of REGULATION

Advance Payments

THE attorney for the Public Utilities Commission of Ohio, in an opinion transmitted to that Commission under date of February 5, 1914, said in part:

"The Commission referred to me the complaint of Mr. B. questioning the right of a telephone company to charge and collect telephone rentals three months in advance.

"A public utility may adopt such rules and regulations governing its business as it chooses, providing, of course, the rules and regulations adopted are reasonable, and are not contrary to law. They may adopt a rule or regulation that, before undertaking a service requested, payment in advance for such service must be made. On this subject, Wyman on Public Service Corporations, Section 430, says:

> Of the right to demand payment before undertaking the service requested there can be no doubt. The carrier of goods may in all cases insist upon payment of charges when the goods are tendered. * * * By the same principle a telephone user must pay in advance the usual charge made for the regular period of filing prevailing.

"The identical question presented by Mr. B. has been passed upon by the Supreme Court of Nebraska in the case of the Buffalo Telephone Company *vs.* Turner, 82 Neb. 841. The Court held:

> A rule of a rural telephone company that telephone rent must be paid *six months* in advance is reasonable, and a subscriber refusing to comply therewith is not entitled to service from the company.

"In the Nebraska case, the Supreme Court held that the requirement that telephone companies could collect for six months in advance was a reasonable requirement. There can be no question that the rule that three months in advance is reasonable and valid and legal.

"I am of the opinion, therefore, that telephone companies can make a rule requiring their subscribers to pay three months in advance."

Correspondence Not Subject to Inspection of Interstate Commerce Commission

ON February 23, 1915, the Supreme Court of the United States handed down a decision to the effect that the Interstate Commerce Commission has at the present time no right to inspect the correspondence of common carriers, and that the words of the Act "Accounts, Records and Memoranda" do not include correspondence.

The case in which the decision was made was that of the Attorney-General *vs.* Louisville & Nashville Railroad Company, and arose out of the refusal of the railroad company to permit the examination of certain of its correspondence by the Examiners appointed by the Interstate Commerce Commission.

The Court interpreted Section 20, and its amendment of February 25, 1909, of the Act to Regulate Commerce as not including correspondence, and that the evident intent of the Section and its Amendment was to establish a uniform system of accounting, and not to open the correspondence of the companies subject to the Act to the inspection upon demand of the agents of the Government. Especial emphasis is laid upon confidential communications between the Railroad Company and its attorney in the following language:

> The desirability of protecting confidential communications between attorney and client, as a matter of public policy, is too well known, and has been too often recognized by text books and courts to need extended comment now. If such communications were required to be made the subject of examination and publication, such enactment would be a practical prohibition upon professional advice and assistance.

The Court further held:

> We think the right of inspection and examination given by the Interstate Commerce Act by the amendment to Section 20 was not intended to be limited to such accounts, records and memoranda only as were made after the passage of the Act, but is intended to permit an examination of all such accounts, records and memoranda for the purpose of carrying out the provisions of the Act. * * * We think it is clear from the terms of the Act, read in the light of this proviso, that Congress did not intend to draw the line of inspection at preëxisting accounts, records and memoranda.

Admission of Competition to Occupied Territory

IN November, 1914, the Idaho Commission refused a Certificate of Public Necessity and Convenience to the Electric Light and Power Company to enter territory already served by another company. On January 16, 1915, the Idaho Commission, with a changed personnel, issued a Certificate of Public Necessity and Convenience permitting the entrance of this utility in territory already occupied and served by another and similar utility on the ground that since the Idaho Public Utility law had been taken almost literally from the California law, the interpretation placed upon it should follow the interpretation made by the California Commission. The Idaho Commission states that under the California rule a Certificate of Public Necessity and Convenience is granted in such cases, as it is shown that the existing company was not performing its duty to the public at the time of the threatened competition, and that the applicant utility is able and ready to render the required service adequately and at reasonable rates. In this particular case the Idaho Commission found that while the existing company was rendering reasonably good service, it was not doing so at reasonable rates at the time the territory in question was first threatened with competition, and that it was not completely occupying the entire territory, and that the entering company could furnish power at as low if not lower rates, than the occupying company.

In handing down the decision, the Idaho Commission says that the door of competition will not be thrown wide open in the State of Idaho, and that a second utility must show that it can give such service as will be of material advantage to the public before it will be allowed to enter a field already occupied by a similar utility, provided always that the existing utility is furnishing the public in its territory with adequate service at reasonable rates at the time of the threatened competition.

Land for Wedding Gift

Philadelphia Banker Buys Lot in Brooklyn for Daughter

TWO minutes' talk over the long distance telephone completed yesterday a $35,000 deal for a vacant lot adjoining the Crescent Club's country home in Brooklyn. The unseen and unknown buyer was E. Walter Clark, Philadelphia banker and yachtsman, and Cornelius Van Brunt, whose home adjoins the lot, was the surprised salesman.

Two days ago Mr. Clark and some friends were motoring to Coney Island by way of the Shore Road. Mr. Clark suddenly ordered the chauffeur to stop the car as it was passing the lot next the Crescent Club overlooking the harbor. He got the name of the adjoining resident and drove along. Yesterday's deal was the result.

The site, with a handsome summer home, which will be built on it, will be Mr. Clark's wedding gift to his daughter, Christine, who is to be married soon to William Prentice Willets, of the Bliss Projectile Works of Bay Ridge.—*N. Y. Tribune*, March 5, 1915.

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Here and There

A Perfect Cut-over

A No. 10 common battery switchboard, superseding a five-position magneto board, was cut over January 23, at Bound Brook, N. J. The new office, located at No. 15 Maiden Lane, is unusually cozy and convenient.

There were 516 stations and 307 lines cut over. The cut was made without a lamp showing. Taking into consideration the weather conditions under which the cut was made, this feat was exceptionally fine. A steady downpour of rain, with the thermometer hovering around the freezing point made the conditions anything but favorable and also showed the good condition of the drop wires.

The changing of the instruments was completed on February 6, by nine men, which is a very good record, considering the ground which had to be traversed and the poor facilities for traveling.

P. E. THOMPSON,
General Plant Foreman,
Plainfield, N. J.

MEN WHO MADE THE BOUND BROOK CUT-OVER FROM MAGNETO TO COMMON BATTERY, JANUARY 23, 1915.
From left to right, standing: H. Owens, F. Harding, L. Durar, C. G. Schaefer, A. A. Harris, F. Diem and H. Agans.
Seated: J. Trotter, F. Morgan, W. Wilson, L. DeFreitas, and C. VanSeursen.
Bottom row: A. Ayres, W. Agans, and G. Clarke.

Goose Endangers Rural Plant

The diversity and unexpectedness of sources of line trouble would make interesting and, frequently, humorous reading if the various cases could be collected. For the ambitious one who will compile such a work of entertainment and instruction here is some data from Mrs. Cullings of the Mariaville Telephone Company: A rural line was crossed and the trouble man hunted for the cause some time in vain. At last it was discovered that at the residence of a farmer the insulation had been removed from the loop wire. Investigation disclosed the fact that a goose had partaken of this valuable part of the telephone plant, presumably by way of diversion or as a "between-meal" lunch.

Finder of Men

On the evening of December 26, 1914, about nine o'clock, Mr. Frank Jones called me and stated he had happened to read in an evening paper that his friend, Fred Ward, had been taken ill on a train bound for Saranac Lake, and had been removed from the train at Troy.

Mr. Jones asked my assistance in locating Mr. Ward as he knew Mr. Ward was without friends and funds, and he wanted to wire assistance.

The situation was explained to the toll operator at Troy, who tried to locate Mr. Ward through the hospitals, newspapers, and station agents in Troy, but without success.

Mr. Jones then stated that Mr. Ward had at one time been connected with the Keith Theatrical Company, and acting on this information we learned through the manager of Keith's Theater at Troy that Mr. Ward was at the Rensselaer Hotel.

A call was passed at 9.55 P.M. for Mr. Ward at the Rensselaer Hotel, but as he was too weak to talk the hotel manager took the message.

Mr. Jones expressed his thanks to me for the service and for that of the Troy operator, and wanted to express his appreciation by sending tickets for a theater.

(MISS) M. D. HIGGINS,
Night Operator of Nyack.

For the "Conscience Fund"

On a recent report received from one of the connecting companies of the New York Telephone Company, appears this memorandum:

> C. A. Culver, who is not a subscriber, gave us $2. He said he could not afford a telephone but had used his neighbor's 'phone so much, he felt as though he ought to pay something.

If we are to have receipts of this character in any amount, we shall have to establish a "conscience fund" account.

The incident reminds me of the case in one of the smaller companies where a discrepancy in the payroll figures led, on investigation, to the explanation that a certain weekly amount not accounted for otherwise was due to the horse. In this case, the horse, in effect, was on the payroll. Such a condition gives rise to many questions. How can the horse sign the payroll or how could he delegate that authority to anyone else?

W. W. NICHOLSON, *Syracuse, N. Y.*

Bell Subscribers

Louis H. Terrill, Chief Clerk at Corning, N. Y., tells of a contest held for the canvassers of one of the leading magazines. The publishers offer three cash prizes for those canvassers who secure the most subscriptions to the magazine from people who are also Bell telephone subscribers. Evidently the publishing company believes that collections can be made with greater ease when a telephone is available, and that the possession of a Bell telephone furnishes some criterion of reliability. This speaks well for the manner in which the salesmen are doing their work; it is the reliable people who will be permanent subscribers that are the desirable prospects.

A Telephone Playwright

A person's ability in his vocation can often be increased by a judicious practice of an outside interest or hobby. This avocation in the case of Joseph M. Giles, a general clerk in the Rochester commercial office, takes the form of writing short plays and farces. "How It Hap-

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pened" is one of the most successful of his products, and in it the telephone plays an important part. The Mu Psi fraternity produced Mr. Giles's farce in Rochester not long ago, and it met with signal success.

Saving the Dinner

B. C. McCusker, of the Plant Department, Manhattan, tells this amusing story of what may be done with the telephone in an emergency:

A friend of mine and his wife, who reside in Kingsbridge, were on their way to church one Sunday when they suddenly remembered that a chicken had been left in the oven. Knowing that there was a telephone in the church study, my friend hastily wrote a note which he handed to an usher as he passed into the church. The note read as follows:

Please call Kingsbridge —— and tell Mary, the housemaid, to remove chicken from oven at once.

Shortly before the service was over, the usher handed my friend a note which read:

Mary notified. Chicken saved.

Knight Errant at Scarsdale

One morning bright and early, a gentle knock was heard on the door of our Scarsdale central office. The Chief Operator, who responded to the call, was asked by a poorly dressed person, evidently a tramp, "Madam, excuse me for intruding, I would like to ask if your husband has an old pair of shoes that could be given to a poor old soul down and out in the world?" When the tramp was informed that he was making his inquiry at the central office of the New York Telephone Company, he said: "Well, what do you know about that? I have seen a number of central offices, but this one looks like a bungalow to me." The tramp politely tipped his hat and walked off in amazement.

G. E. SHERWOOD,
Assistant Traffic Manager, White Plains.

Advertising Across the Continent

The novel advertisement for the Borough of Richmond, which has started across the continent for the Panama-Pacific Exposition, in the shape of a prairie schooner of the '49 type, carries a number of active young men whose business it is to set forth the good points of Staten Island as a place of residence and of business opportunity. In order to secure prospects who will locate here, attractive booklets detailing the advantages of the Borough of Richmond are distributed at promising points in the route, and, prominently displayed among the telling inducements held out by the booklet, is the significant statement, "Best and cheapest telephone service in the world."

G. J. HAFSTROM,
Local Commercial Manager, Tompkinsville.

Street Music Heard 400 Miles Away

Apropos of the opening recently of the trans-continental line and the great progress made in the transmission of speech, I might mention a little incident which occurred recently in the small town of Chateaugay on the Canadian border.

A subscriber had just finished talking to his partner in New York City, some four hundred miles distant, and took the pains to call the Chief Operator to say that during the progress of his conversation he had distinctly heard a band playing "It's a long way to Tipperary." He said that it was also a long way to New York from where he was, and that the incident seemed the more remarkable to him because his partner was some nine stories above the street. Undoubtedly the band marching in the street never thought that the music they were playing was being carried over four hundred miles on the wires of the Bell System.

E. R. STONAKER,
Supt. of Traffic, Mountain Home Telephone Company, Saranac Lake.

Telaudit Club

The monthly meeting of the Club was held March 1. After the meeting a most interesting paper was read by Mr. C. H. Fuller, of the A. T. & T. Commercial Department, on the subject of "What the L. D. Lines Have to Sell."

There were about sixty-five members present.

Intercommunicating Service

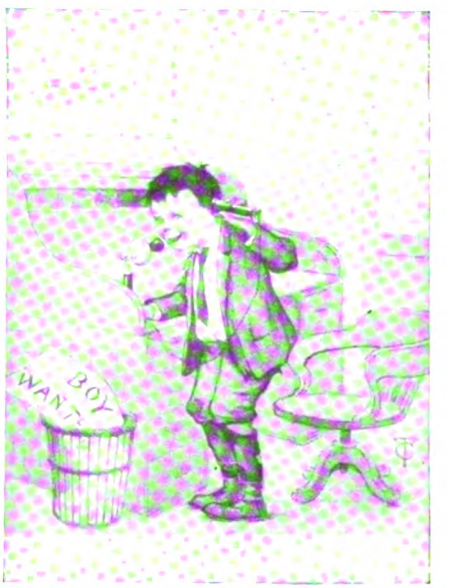
In the early part of 1914, Mr. William I. Clark planned the erection of a residence on upper Fifth Avenue, Manhattan. No provision, however, was made for an intercommunicating telephone system. "All I will require in the way of telephone service," he said, "will be a direct line to the central office and two extension telephones."

In September request was made for a commercial representative of the Company to call upon Mr. Clark and take an order for the installation of this direct line and two extension stations. In December, however, Mr. and Mrs. Clark decided that they would like information regarding interior telephone service, and at the suggestion of their architect, I arranged with a representative of the Plant Department to make an inspection of the residence and estimate the cost of installing an intercommunicating residence system.

We did not anticipate an interview with Mr. or Mrs. Clark on this occasion, but during our inspection we met them both, each on a different floor of the residence. Each was equally surprised to see representatives of the New York Telephone Company, as they had expected their architect to send them a representative from a manufacturer who would sell them a system for interior use exclusively. We took the opportunity thus afforded to explain the advantages of our intercommunicating system, which provides for incoming and outgoing messages as well as intercommunication. Mr. Clark inquired what the approximate cost would be, and we estimated it roughly for him, also arranging to call on him later with a sample instrument, and demonstrate its use.

When we returned to make the demonstration I was able to inform Mr. Clark that our actual figures for the work were slightly less than I had estimated, and before we took our departure I had secured a contract. It was arranged that work should begin on the following Monday, three days later. Within two hours the necessary material was ordered and in due time the installation was completed.

W. HINCHCLIFFE, *Plaza Commercial.*



"Mudder, I got de job!"
From a Popular Print

January 25, 1915

Father Knickerbocker: "Hello, Miss 'Frisco, how do you like your new Transcontinental?"

Miss San Francisco: "Fine, everything went off according to the card."

Father Knickerbocker: "*A la Carty*, you mean."

(Barking of Pacific sea-lions heard on Broadway.)

Fred. B. Appleget

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EMPLOYEES ARE INVITED TO SEND IN ACCOUNTS OF ALL ATHLETIC GAMES AND MEETS IN WHICH THEY PARTICIPATE, TOGETHER WITH PHOTOGRAPHS, IN ORDER THAT OUR REPORTS OF SUCH ACTIVITIES MAY BE MORE COMPLETE

Athletes! Attention

Schuetzen Park, New Jersey, June 12, 1915

PLANS are now under way for the Second Annual Outing and Games of the Telephone Club for the employees of the downstate divisions. Schuetzen Park, Hoboken, N. J., will be the scene of activities and June 12 has been selected as the date.

A program of novelty events, as well as the regular athletic program, will be arranged, and Mr. G. L. Yates, chairman of the Track Committee, is desirous of obtaining suggestions for novelty events in order to make the athletic program as interesting and amusing as possible for the spectators. Suggestions may be sent through company mail addressed to the Chairman, Track Committee of The Telephone Club, No. 81 Willoughby street, Brooklyn, N. Y.

Telephone Bowlers in Monmouth District

A COMMERCIAL bowling league was gotten up by the Y. M. C. A. of Asbury Park, of which a team from the local forces of the New York Telephone Company and five other teams, representing large business concerns, became members.

The Telephone team soon became known as the "Phony Team" and at the end of the season came out second in points and tied for second place in games.

T. L. Little proved to be the best "Phony bowler" in this set of games, second place being held by B. S. Danskin, captain of the team. Mr. E. F. Ford offered a trophy for the highest score attained from December 1 to the end of the schedule, but would not reveal what it was to be until it was won. It proved to be a very pretty stick-pin and was won by B. S. Danskin.

The "Phony team" in this series of games consisted of: J. A. Waterbury, J. G. Webster, W. H. Hall, T. L. Little, J. T. Lawley, W. H. Jordan, J. H. Story, H. K. Peniston, R. L. Turner, and B. S. Danskin.

A new league has now been formed in this district and is known as the "Inter-City League," embracing sixteen teams from Asbury Park, Ocean Grove, and Bradley Beach. The schedule calls for ninety games, of which the first three were rolled February 24.

The Telephone team will appear in gray flannel shirts with a blue bell seal on the left breast. This seal will be the same as the standard seal, except that the words "American Telephone and Telegraph Company" will be omitted and "New York Telephone Company" substituted.

Several prizes have been offered including a mineralite ball donated by the Brunswick-Balke-Collender Company which goes to the person making the highest average; a silver medal for each member of the winning team and a bronze medal for each member of the team finishing second.

The Telephone team has reorganized and H. K. Peniston has been elected captain and several Plant men have been included on the new team.

Not so Bad

WESTCHESTER Traffic won a bowling match against teams from the Public Telephone and Long Island Traffic. There was something about this contest, which was held at the Telephone Club, that was unusual. Perhaps the following "Poem" by "One of them" explains.

After the Bowling Contest

Up in Westchester by the Sound,
Hear that terrible rumbling around!
Hear that noise? Hear that yell?
"WESTCHESTER, WESTCHESTER, WELL, WELL, WELL."
The men behind the ball, and not the gun,
Invaded old New York and had SOME fun.
The clever "P. T's" and the skillful "L. I's."
Before THIS bunch got their surprise.
Then everybody hollered and everybody yelled:
"WESTCHESTER, WESTCHESTER, WELL, WELL, WELL."
Now, everybody's happy, everybody's glad.
Just because Westchester wasn't *so bad*.
Westchester's little and considered VERY small,
But the boys up there can wield the ball.

"ONE OF THEM."

Bowling Notes

THE Plant and Commercial Departments in Newburgh bowled March 3, and the Commercial won two of the three games rolled, the high mark of the night being made by Kline of the Commercial.

On the same night the Buffalo bowlers wound up their tournament.

The Maintenance team won, as shown by the following order in which the teams finished:

Teams.	Won.	Lost.
Maintenance	48	15
Assignment	43	20
Appraisal	42	21
Engineers	40	23
Traffic	25	38
Construction	21	42
Equipment	17	43
Installation	14	46

Tug Off Tie

Between Paterson and Long Island Plants

ON Wednesday evening, February 17, the Paterson Elks held their Annual Indoor Athletic Meet at the Paterson Armory. A number of events took place, but the star performance of the evening was a Tug-of-War pull between teams representing the Paterson District Plant Department and the Long Island Plant Department of the New York Telephone Company. These two teams pulled a draw at the Telephone Club's Athletic Meet held in January at the 71st Regiment Armory, New York City, both teams being awarded the first prize, which consisted of handsome gold watches. The Elks put up as a prize gold chains and medal lockets.

The teams in question pulled five minutes, which resulted in a draw. After a reasonable rest another pull of five minutes took place, in which the Paterson team was victorious, gaining about an inch and a half of rope. The members of the two teams were as follows:

Long Island Plant Dept.		Paterson Plant Dept.
J. Arbeson	1st.	Ronald MacDonald
M. Hansen	2d	Joseph Ryan
J. Schulz	3d	Michael Comerford
C. Abrahamsen	4th	Patrick Quinn
A. Geldol	Anchor	Paul Tillman
Peter Karcher	Captain	Thomas Leonard

Indoor Golf

THE second indoor golf tournament was held at the Telephone Club Tuesday evening, March 2. There were eighty entries.

The contest consisted of nine holes medal play, first, second, and third sixteens to qualify, with match play at nine holes, except in the semi-finals and finals, which were at eighteen holes.

There were first and second prizes for the two lowest scores in qualifying, and a first and second prize for each sixteen.

Owing to the number of entries, play began about half-past five, and it was nearly midnight before the last tie was played off.

Many novel obstacles were introduced and the good humor and enthusiasm of the players and the "gallery" made the evening one of exceptional enjoyment.

Manhattan Bowling

THE bowling tournament at the Telephone Club continues to bring together nightly the devotees of this sport. At the present time Manhattan and Bronx Commercial and Engineering are leading, neither team having been forced to lower its colors to an opponent. The Traffic, Manhattan and Bronx Team No. 1 has rolled the fine team score of 1068, and Frank Reynolds, of Manhattan and Bronx Commercial, has the high individual average of 212 as well as high score for one game, 241.

On Wednesday, April 7, a five-man team match has been arranged with the Western Electric Company. The Telephone team will be made up of the five high-average men in the tournament. Later on a long-distance telephone match will be arranged with the up-State divisions, and a duck and head pin tournament for members.

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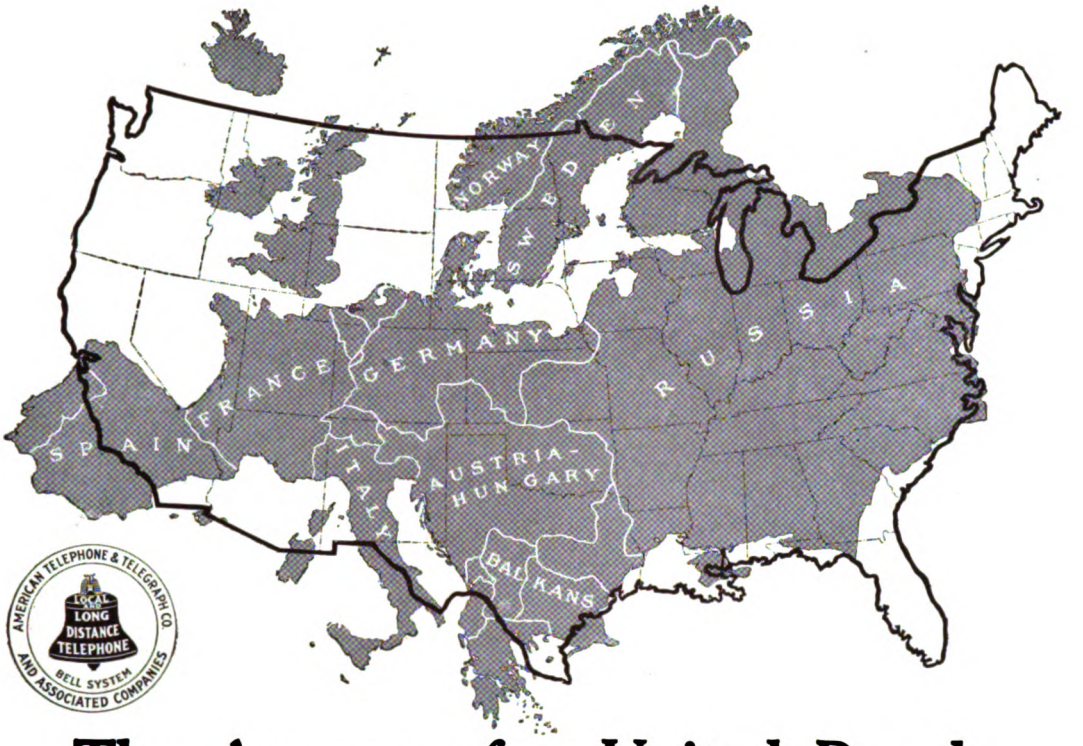

The Agency of a United People

A striking comparison between a homogeneous country and a heterogeneous group of countries is obtained by placing over the map of the United States the map of Europe. These represent the same area —about 3,000,000 square miles—if a few of the remote provinces of Russia are omitted.

Europe has the advantage in population, with more than four times as many people as the United States; in the number of large cities, with two and a half times as many cities of over 100,000 population.

Yet the United States, a comparatively young country, has outstripped Europe in the diffusion of civilization, because of its wonderfully greater means of communication between all parts of its area. The United States not only excels in transportation facilities, but it has nearly three times as many telephones as Europe, or about eleven times as many in relation to population.

By the completion of the Transcontinental Line we now talk from one end of this country to the other, while in Europe the longest conversation is no farther than from New York to Atlanta. and even that depends on the imperfect co-operation of unrelated systems.

Europe, with twenty-five countries and many different languages, serves as an illuminating contrast to the United States, with one language and a homogeneous people, despite the fact that our population has been derived from all parts of the world.

During the last forty years the steadily extending lines of the Bell System have contributed in no small measure to this amalgamating of different races. The latest achievement—the linking of coast to coast—has given greater force to the national motto, "E Pluribus Unum."

AMERICAN TELEPHONE AND TELEGRAPH COMPANY

AND ASSOCIATED COMPANIES

One Policy *One System* *Universal Service*

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Put Your Plans Into Action —Telephone

POSSIBLY you have a plan for promoting prosperity in your business, but are hesitating about putting it into action.

Why not turn to your ***telephone,*** test out the possibilities of your plan, then go after the business that's waiting for you?

It costs little to find out by ***telephone*** how you can get more business, and the telephone may give you just the help you need to ***pull prosperity your way.***

Don't wait — work! Let the telephone help you to put your plans into action.

AMERICAN TELEPHONE & TELEGRAPH CO. LOCAL AND LONG DISTANCE TELEPHONE BELL SYSTEM AND ASSOCIATED COMPANIES

NEW YORK TELEPHONE COMPANY

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The TELEPHONE REVIEW

Vol. 6 APRIL, 1915 No. 4

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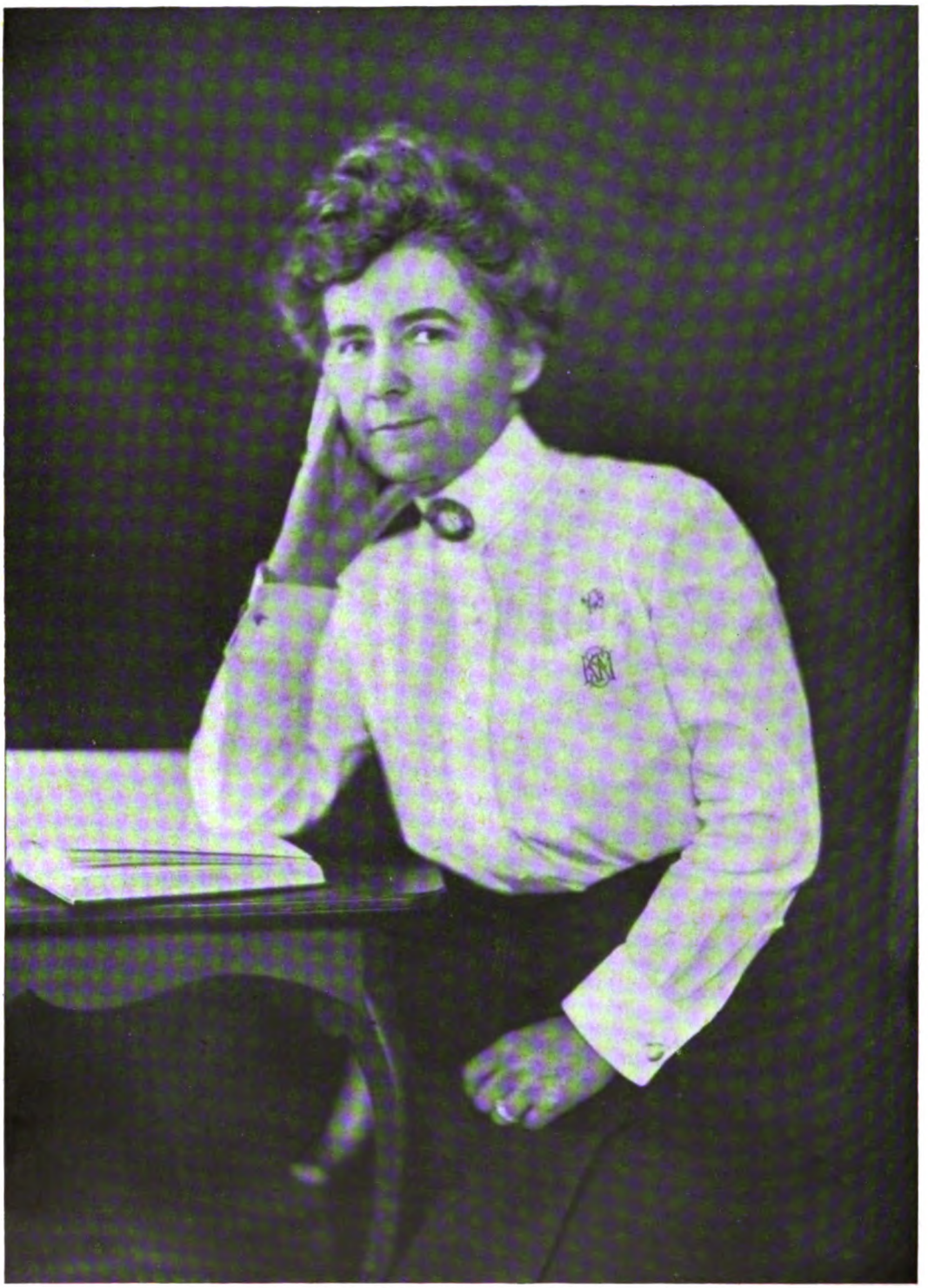

MISS KATHERINE M. SCHMITT
Manager of the Operators' School, Manhattan-Bronx

Miss Schmitt has inspired many thousands of operators with the ideals of womanliness and loyal service which she typifies

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The TELEPHONE REVIEW

VOLUME·6· NUMBER·4

NEW YORK
APRIL
1915

The TELEPHONE REVIEW
J. D. NEWMAN, Editor.

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VOL. VI. APRIL, 1915 No. 4

The Bell System, Its Employees and the Public

HOW many subscriber stations were there in the Bell System on December 31, 1914? In how many places were they located, and how much larger was the number of such places than the number of post offices, or railroad stations, or regular telegraph stations?

How many miles of wire were in use, and how much traffic was handled over them?

How did the business grow last year, and what did it cost to enlarge the plant to keep up with the growth?

How many new stations had to be added to make a net gain of one station?

What provision is made for depreciation, and what is meant by depreciation?

What were the income and expenses for last year, and how were they divided?

Did you know that the gross telephone revenue per employee was $1,408, and that of this amount 46.5 per cent., or nearly half, was paid in wages; 5.5 per cent. went for taxes; supplies and expenses consumed 24 per cent., leaving net operating revenue 24 per cent?

Did you know that the average gross revenue per station was $40.20, and that of this amount $18.72, or nearly half, was paid out in wages, while taxes received $2.26?

What do you know about the Western Electric as a part of the Bell System?

Did you know that last year $1,338,261 was expended for all classes of employees' pension, disability and death benefits?

Did you know that there is no suit pending against the A. T. & T. Co. or any of its associated companies, charging any violation of any State or federal anti-trust law?

Would you like to know more about the recent offer of stock at a low price on instalments, of which over 30,000 employees have availed themselves?

Do you want to know more about the wonderful advances in telephony made by the Engineering Department, and other developments that are pending?

Are you anxious to know where the Bell System stands on important questions of the day affecting the business?

All these questions are answered, and a wonderful lot of the most interesting information upon other subjects is contained in Mr. Vail's Annual Report, which has recently been issued.

It would not be possible to summarize the report as a whole, or do it justice by attempting to pick out special features. The statistical information which we print elsewhere is not intended in any sense to take the place of the report, but rather to stimulate interest in it for the inspiration it affords.

How Mr. Vail regards the position which the Bell System holds with the public, and the position which he assigns to the individual employees of the System, may be seen from the following paragraphs:

The Public

The position that the Bell System holds with the public is entirely due to the fact that the Bell service has been consistently built upon the policy of creating a service of such great benefit and advantage to the public, and rendered at prices so well within its value to all—so well adapted to the use of all, as well as being a direct pecuniary advantage to each user—that none are too poor to take advantage of it, and none so independent as to get along without it.

The Employees

The service of the Bell System as it stands to-day is the result of organization and system, in which every individual member is a free, active and responsible agent within his own sphere of action and the limitations of his duties. Each individual feels that he is an essential and important part of the whole, and recognizes his obligatory relation toward all other parts and his accountability and subordination to the organization of which he is a part.

We are "free, active, and responsible" agents within our own spheres of action and the limitations of our duties! Are we, each and all, living up to our opportunities and responsibilities as Mr. Vail sees them?

It is upon us that the position of the Bell System with the public depends.

Copies of this Report may be obtained from any Commercial office or by writing to the Editor of this magazine.

Shopping by Telephone

STRIKING proof that the telephone is becoming a standard medium for buying and selling in the United States, and that its place in American trading activities is daily being strengthened and enlarged, is afforded by the above advertisement, which has been appearing in numerous up-State newspapers, such as the Glens Falls *Post Star*, the Batavia *Daily News* and the *Saratogian*, of Saratoga Springs.

The newspaper is the looking-glass of the nation. It sees and reflects the actions of individuals, of groups of individuals, and of the nation as a whole. Consequently, when the newspapers buy space in their own columns to urge advertisers to solicit telephone trade, it means just one thing. It means that the newspapers see that more and more of the people of this country are shopping by telephone. It means that the newspapers recognize the fact that order-

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ing by telephone has become a definite factor in American shopping. If for no other reason than that the newspapers are accurate reflectors of conditions, this advertisement, published by the newspapers on their own initiative, should arouse every merchant to the fact that telephone ordering is here to stay, and is a trade prospect that should not be overlooked.

A New Telephone Song

IN THE TELEPHONE REVIEW of April, 1911, there was a song which is reprinted under a new title and with a new chorus, and inclosed with this copy of THE TELEPHONE REVIEW. This new song will doubtless be a welcome addition to the collection of telephone songs which are so popular at banquets and other gatherings of telephone employees. The author of the words is Mr. F. G. Nelson, Assistant Treasurer of the American Telephone & Telegraph Company.

To celebrate the inauguration of the transcontinental telephone service, our readers are asked to send any verses of their own which could be sung to good music.

What Professional Education Can Do

IN telling about his work as instructor of the Plant School, 30 Gold street, Manhattan, Mr. A. W. Oakley said recently that one of its most interesting phases was the difference which the education they receive in the school makes in the men who pass through it. He related a number of instances, showing that whether the students are new employees gaining their first experience, or are old employees who come back for post-graduate courses or to be instructed in different lines of work from what they have been following, the result is always the same, and the men show a greater interest and ambition because of what they have learned. Mr. Oakley said this proved to him that the same thing would be true of all employees of the Company if they took the trouble to study their work, and carry on their education in telephony, even without going to school. One instance was cited which he was asked to describe for our readers. He says that every one of the men referred to in the following account has risen to a position of greater importance and remuneration than would have been possible if he had continued in the old work he was doing. Mr. Oakley believes that everyone who qualifies himself for duties above his position will make his own way upward. In other words, what circumstances compelled these men to do, others can compel circumstances to do for them. Mr. Oakley's communication follows:

Advancing the Line Troubleman

"GOOD morning, teacher." Thus did a new class salute the instructor of the Plant School at 30 Gold street one January morning in the year 1913. The candidates for instruction had entered in single file, singing "Annie Rooney."

The line trouble job as a specialty had been discontinued in Manhattan, the line trouble and repair work becoming a part of the inspector's duties; and the new class consisted of some line trouble men who were assigned to the inspection department. "Annie Rooney" helped them to report on the new job cheerfully.

After responding to the cheery good morning, the instructor pointed out the coat rack and requested the men to be seated in front of the lecture table.

Vague ideas of the future occupied the heads of these men. In fact, they felt shaky and did not know what to expect, as one of them expressed it later on. It seemed like starting all over again.

This condition was appreciated by the instructor, and the first talk to the class was framed to suit the occasion. Their experience as linemen was just as useful as ever, and a knowledge of circuits and instrument trouble would make better telephone men of them. They were made to feel at home and free to ask questions about anything that might not be made plain to them while in the school.

Interesting work and instruction followed. The circuits and diagrams were not so difficult to learn as had been expected, because of the earnest way the men had of doing things. Everybody gained confidence with each day's work. It was a very enthusiastic class before the first week had passed, and it is just such interest as this that has helped them to make good on the new job. One of the men said he only wished that the change, for him, had been made years ago.

The class averaged 95 per cent. in the first grade examination and 96 per cent. in the second grade. In the third grade work two of the men were excellent at the branch exchange circuits, trouble testing, and wiring. The others were good. Taking it all through, the work done was very creditable to the men and I believe that they are doing their best to become first-class telephone men.

Circumstances forced these men out of a rut into a broader field.

A. W. OAKLEY.

The Telephone Moves a Record Load

THE Erie R. R. Employees' Magazine for March tells how the Erie's great engine, "Matt H. Shay," the largest in the world, was coupled to a train of 250 loaded coal cars, a dynamometer car, and caboose, and sent forward from Binghamton, N. Y., to Susquehanna, Pa., a distance of 23 miles. The magazine states that this was a test run, and broke all records. The total weight of the train, exclusive of the locomotive, was 17,912 tons. Its total length was 8,547 feet, or 1.6 miles, and the maximum speed attained was 14 miles per hour.

The method of getting the train under way is interesting. Pushers were used which moved all the slack forward until all the cars were in motion, after which the pushers were uncoupled and followed the train, in case they should be needed again. This operation eliminated the danger of pulling out drawheads in starting, and of course took the strain of dead weight off of the engine in front. Here is where the telephone came in. The article in the magazine states:

> Portable telephones were used to communicate from the head end to the rear of the train, and this made it possible for the pushers to do their work in unison with the lead engine in starting the train.

A splendid moral may be drawn from this illustration, which our readers will not be slow to grasp. The engine in front and the pushers in the rear worked in unison, and started the train, because they worked by telephone.

This is not the first time that the man far behind has been on an equal footing and worked coördinately with the man at the head, through the simple agency of the telephone. A mile and one-sixth is long for a freight train, but far greater discrepancies in business advantages have been set at naught as completely as the two ends of this long train were brought into communication, and by the same method. Let the man at the end of the procession make the telephone his partner, and he will soon do business abreast of the leader.

No matter how huge the task, put a worker at each end, unite them by the telephone, and the undertaking is pretty sure to glide forward to successful completion.

Help Wanted!

IN our last issue we called attention to the importance of the Editor's being notified of any changes desired in the distribution of THE TELEPHONE REVIEW. Since the publication of that item, we have received a number of corrections, and if there are any more to come, please send them in. Failure to receive the magazine promptly is sometimes due to a change in address. Once it was due to a mistake on the part of the expressman. A package was addressed to the Murray Hill Storeroom, 221 East Thirty-seventh street, Manhattan. The expressman arrived at the correct address, but asked for Mr. Hill. He was told that there was no Mr. Hill there, and so he went away. Later on he came back and asked for Mr. Hill, and again was told there was no Mr. Hill there, but he said he had a package addressed to Mr. Murray Hill, and wanted to deliver it. The storekeeper thereupon looked at the package and saw that it was addressed to the Murray Hill Storeroom, and not to Mr. Murray Hill.

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Comments on, and Extracts from Mr. Vail's Letter

To the Directors and Security Holders of The American Telephone and Telegraph Company

Accompanying the Annual Report for 1914

Economic Situation

DURING the last few years the economic life of the country has been so tossed about by the varying winds of public opinion that it is now absolutely necessary for us to take our bearings, and to know exactly where we are and whither we must direct our course to smoother waters. There are certain points of the compass which we know and which tell us that we are in danger. We know that in the public service corporations and the manufacturing industries alone there are not less than two million unemployed persons in this country to-day. We know that the earnings of those unemployed people should be at least $1,250,000,000 a year. We know that if these people were employed, as they ought to be employed, earning a steady wage and producing wealth from which their wages could be paid, they would be able to purchase out of the wealth thus produced $1,250,000,000 worth of other people's products, which would thus increase the business and the profits and the employment of vast hosts of other people occupied in producing what these two millions of unemployed need and would purchase, if business conditions would permit their employment.

Three Great Industrial Groups

The divisions of the industrial groups of our modern economic life are so interdependent that a loss to one is felt throughout all. The public service enterprises, by which men and wealth are transported and communication between all parts of the country is maintained, are one of the three great creative divisions of industrial enterprises, of which the other two divisions are manufacturing and agriculture.

Transportation and intercommunication are the most important of all in their creative effect. Transportation and intercommunication change local stagnation into world-wide interchange and prosperity. Their relative economic importance to other industries is many times their relative capital.

During the quarter of a century just passed these three principal industries increased about two times, and now represent about $100,000,000,000 of invested capital. This is more than half the entire wealth of the country. In enterprises of transportation and intercommunication the capital increased over $15,000,000,000, or on an average of $600,000,000 a year. Their employees increased over 175 per cent., and wages which they received increased over $1,350,000,000, or more than two times what they received twenty-five years ago.

Under normal conditions in the public service and manufacturing industries, there would be employed to-day nearly twelve million people, earning from $7,200,000,000 to $7,500,000,000 a year. The ownership of these enterprises is represented in certificates of stock held in small quantities by the great mass of American people. There are millions of such owners among our American citizens. Therefore, those who suffer directly from any decline in the prosperity of these tremendous enterprises are not alone the twelve millions of unemployed, but are the other millions who have invested in them. The *indirect* loss to the other people of the country is greater still, for when people are thrown out of employment or their income is reduced through a fall in the returns on their invested capital and savings, their power to purchase that which others have to sell is reduced, and so others, not directly connected with these enterprises, find their business declining.

Prosperous Public Service Enterprises Increase Employment and Stimulate Business Activity

Public service enterprises when prosperous are not only large employers of labor but are large purchasers and consumers of great varieties of products and manufactures. Their activity means employment and circulation of money, which in turn means further consumption of products and manufactures, and that means further employment of labor. Employment means ability to purchase. Ability to purchase means consumption. Consumption means production, and production, for which there is a demand, means prosperity. Abundant employment makes the worker his own master. He can afford to purchase and consume what others produce, and that gives prosperity to others. Without employment, he is a burden upon his own savings, if he has any, or on his friends, or on the other members of the community.

Early Rapid Growth of Public Service Enterprises

This signifies the importance of the prosperity of the public service enterprises to the American people. In no other country in the world have these enterprises reached such enormous proportions. No other country in the world has been so rapidly advanced in material prosperity by the initiative and the leadership of the public service enterprises.

But they grew so fast that they aroused discussion and agitation concerning the attitude of the Government toward them. Their great strides were made when they were given the freest scope. Within the last few years the inevitable swing of the pendulum of public opinion has been toward restriction of their power of initiative in the form of regulating commissions and restrictive legislation.

This tendency has now reached its climax, and when we take our bearings we find ourselves plunged into a period of depression and unemployment, which indicates an unsound economic practice somewhere, and which it is believed will not be made sound until, in the language of President Wilson, "the generous

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energies" of the country are given more freedom from legislative and administrative restraint.

Experience or Theory?

When we get our bearings we shall find ourselves at the parting of the ways with respect to our attitude toward these public service enterprises. We shall be obliged to decide whether to abandon altogether the economic basis upon which this country has thriven and grown in wealth, prosperity and magnificence beyond example in the history of the world and to substitute for it an untried theory of the Socialist, or whether we shall moderate our recent excess of restriction. Another step in this direction would not be regulating these enterprises but would be confiscating and operating them—and then you would have Socialism.

There is a very treacherous twilight zone between legitimate regulation and that form of interference by government authority which is not regulation but is a practical substitute of the government for the owners of these great enterprises. The knowledge that we have reached the very verge which separates regulation from operation, and the uncertainty whether public opinion will compel us to pause at this point, in Mr. Vail's judgment, is mostly responsible for the present uncertainty in business and for the unemployment of so many hundreds of thousands of people in this country.

Vast Improvements Due to Individual Initiative

He does not intend to discuss the merits or demerits of the socialistic program, but would like to remind men who are inclined to be discontented with the economic progress of their country to remember that everything is a matter of comparison. Not only is the average man in America infinitely better off than the other men in any other part of the world from a material standpoint, but he is infinitely better off than his American grandfather, and the difference has been achieved mostly by the development of the public service and manufacturing enterprises.

Consider the telephone enterprise alone. Thirty odd years ago no one had a telephone. To-day nearly every other family in the United States enjoys the wonderful advantages of this service. Think how our grandfathers went to California: in canvas-covered wagons, amid every conceivable danger and hardship, with months on the journey. Think of the weary time our grandfathers were obliged to wait for messages from home, whether business or otherwise. Consider the luxury and speed with which we can go to the great Panama Exposition in San Francisco to-day, and when we arrive there, if need be, think of our being able to call up our friends in the East and hear their voices and talk with them, as if they were in the very next room to us with the door ajar.

It was a customary thing among our great-grandfathers to go barefooted on six days in the week, even in the cities, because they could not afford shoes. They wore the coarse homespun clothes which the poor children in our cities would scorn to-day. Their streets were ill-lighted and dangerous at night. The tallow candle and the little oil lamp, which would be evidence of extreme poverty to-day, were the rule in the day of our grandfathers.

These vast improvements in the condition of the average American citizen came under an economic regime when individual enterprise and initiative were unrestrained so long as there was fair play. It is true that in spite of all this, thousands of intelligent and right-minded people are discontented and insist upon a change. It is well that this should be so. Absolute contentment would mean stagnation. It is discontent which spurs on progress. But it need not be revolutionary discontent. It need not be discontent which would speak ill of the bridge which carried us over. The fault-finding people whom we can respect and heed and whose criticisms are helpful are not the kind whom Daniel Webster denounced, when he said: "I am not one of those who, when their perspicacity enables them to see a spot on the sun, think that a reason why it should be struck from the heavens."

Over-Regulation Means Bankrupt Utilities and Consequently Unprosperous Communities

Well-intentioned public servants put in control of our great public service enterprises are obliged to assume duties altogether incommensurate with their experience, and to substitute their own judgment in the operation of the enterprises for the judgment of its experienced and legitimate managers. By this practice too often unnecessary burdens and expenditures are imposed upon corporations, and no relief given them which makes it possible properly to operate and maintain their plants. Poorly constructed, badly maintained and inefficiently operated utilities cannot give good service. Inadequate revenue makes it impossible to meet capital charges. Capital would avoid any enterprise which had to do with the public service. Without capital, employment in a large way would cease, extension and improvement would be stopped, values would be destroyed, and the enterprise would become bankrupt.

When service is rendered by starved or bankrupt corporations in the hands of receivers, results must follow which will be disastrous. The indirect losses to the public will be far greater than the direct loss to the investor. Decline in prosperity will come to any community dependent upon such corporations. No community with inadequate and inefficient facilities for intercourse and interchange can compete with communities with adequate and efficient facilities. Bankrupt public service, in time, means bankrupt communities.

This is the condition into which a misconception of the proper regulations of great business enterprises is bringing us. And while the uncertainty remains, whether or not we are going to stop before we have actually dispossessed the owners and their representatives, from the management of these enterprises, we cannot expect better times.

The evils which gave rise to the agitation of the last ten years cannot be repeated; business conscience and public morals, as well as regulatory laws, will not permit. Other irregularities will doubtless creep in, for where there is abundance produced by labor, there will be many who will want a part of it without labor. Take the fetters and the restriction off the employment market, keep a good watch of those who do not want to labor, and punish those who betray confidence. Wealth may never be distributed equally nor always employed wisely, but where it exists in abundance there is always a chance for those who are willing to exchange their labor for some of it.

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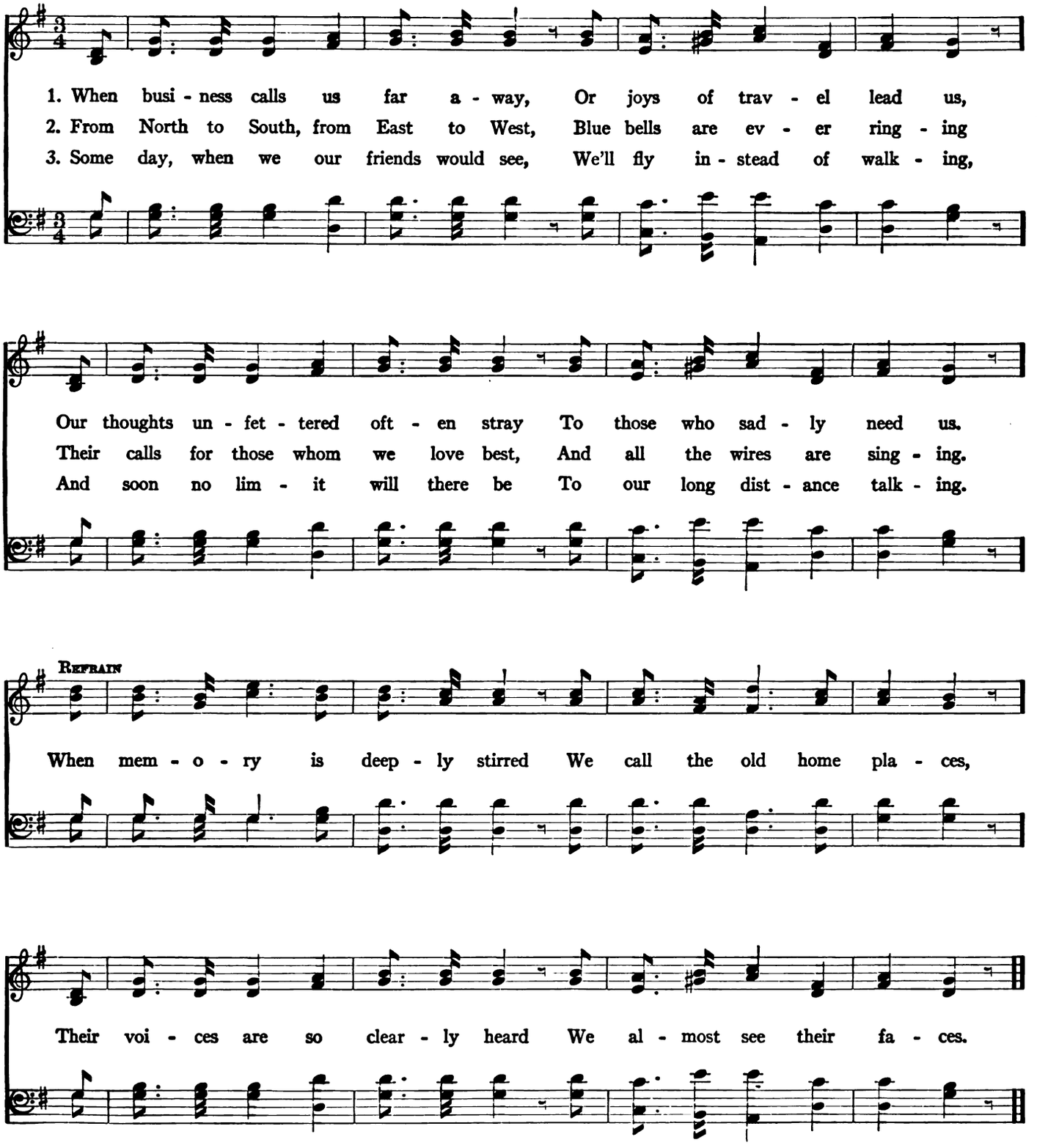
We Almost See Their Faces

By F. G. Nelson

Dedicated to the Transcontinental Telephone Line

Air—Maryland, My Maryland



Supplement to The Telephone Review, April, 1915

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Pertinent Paragraphs from the Report Itself

ALL of the present surplus and reserves, aggregating $190,000,000, is invested in tangible and productive property the revenue from which enables the companies to maintain their efficiency without paying capital charges on this amount.

In the Bell System standardization does not represent a standing still but means unceasing effort, continually improving and upbuilding. Standard specifications covering improvements in all of the thousands of pieces of apparatus and methods employed in the plant and traffic of the Bell System follow each other with astonishing rapidity.

The plant of the Bell System must not be regarded merely as a completed machine which becomes worn out, and then, after a time, is thrown away and replaced by a new one. It is like an ever-growing organism, always growing in size and usefulness, incorporating into its structure what is new and improved, and eliminating the obsolete, the worn out and the used up. Thus it is kept permanently in a condition of full vigor and at the point of highest attainable efficiency, anticipating the ever-growing needs of the service and responding successfully to the always-increasing requirements of the public.

Each year we expend large sums in the scientific, engineering, experimentation and development work which constitutes the process of standardization. As a result of such work, and pursuant to our policy of always providing for the associated companies the best obtainable, we have introduced into our switchboards improvements, in large matters and small, literally by the tens of thousands. In doing these things we have expended on the development of this part of the art alone during the past five years many millions of dollars, and because we have done this we have saved for the public and the associated companies many more millions.

Large and well equipped as our own development staff is, we are constantly on the lookout for new ideas wherever they may arise. A good idea may spring up in the mind of man anywhere, but as applied to such a complex entity as the Bell System, the countless parts of which cover the whole United States, no individual unaided can bring the idea to a successful outcome. A comprehensive and effective engineering, scientific, development and manufacturing organization such as is provided by the Bell System is necessary, and years of expensive work are required before the idea can be rendered useful to the public.

Greater than the benefits directly accruing from the use of the transcontinental service will be the advances which, in numberless ways as time goes on, will result from this achievement to the telephone-using public everywhere.

While the accomplishment of transcontinental telephony is the culmination of years of scientific development and experimental investigations and engineering effort, and while it marks the end of an era, it does not mark the end of our progress. It has laid the foundation for a new period of greater development and greater progress. We are confident that the work of our engineers in this new era will equal and even surpass what they have done before.

Plans of assistance and encouragement to the employees have for a long time been under consideration by this Company. In fact, this Company was a pioneer in practical welfare work, particularly on those lines which bettered and improved the condition of daily employment and aided the employed through those critical periods impossible to anticipate or prevent, and against which the juniors had not been able to accumulate any provision. Welfare work, pension and sick benefit plan, have demonstrated their practical value. The recent offer of stock at a low price on installments, of which over 30,000 employees have availed themselves, was intended particularly as an encouragement to saving.

This has been termed by some "profit sharing." It should not be. It is investment, by which the employee becomes also a proprietor, and he occupies the dual relation of proprietor and employee, which, if it can be practically worked out to its fullest possibilities, will be ideal.

The capital invested must be paid for, in order that new capital in sufficient amount can be obtained as it is needed. The employee, a preferred creditor, must be paid sufficient to get his best services, and his further reward is through increase in compensation, promotion and security of position for proved efficiency, and a proper consideration for his welfare.

This is the situation of the Bell System. It is to be hoped that there will be many ways of bettering the condition of the employees, by improving still further the conditions under which they work and their position as preferred participants, by aiding and assisting them in their efforts to accumulate, and by helping them to educate themselves up to the highest ideals of life work.

Whatever possibilities the future may develop with respect to profit sharing in regulated public utilities cannot now be safely predicted, but it is clear that the efforts to improve working conditions to higher standards than those now existing even in the Bell System should come first.

It takes an investment of nearly $4 to earn $1 gross revenue. This dollar of gross revenue is divided. Forty-six and one-half cents are paid in wages to employees, 5½ cents go for taxes and 24 cents go for material and other expenses, a very considerable part of which ultimately goes for wages, leaving as net operating revenue 24 cents of which about 20 cents pay for the use of the $4 of capital invested. The remaining 4 cents of surplus revenue are actually expended for plant additions of which about one-half is for wages.

Some analysis of the distribution of revenue in this connection cannot fail to be interesting to the employee, the shareholder and the subscriber, each of whom has a vital interest in the revenue, its distribution and the surplus.

The statistics per employee are as follows:

Average investment in plant per employee		$5,338
Average outstanding securities per employee, upon which charges have to be paid, representing capital invested in plant		4,632
Gross telephone revenue per employee		1,408
distributed as follows:		
Wages to employees	46.5%,	$656
Taxes	5.5%,	79
Supplies and expenses	24.0%,	337
Net operating revenue	24.0%,	336
Net earnings are divided as follows:		
Charges paid on capital (which is 5.1% on the capital invested in plant, or 5.9% on the outstanding securities)	$271	
Surplus revenue	65	336

It is for the public to combine to encourage, support and sustain all these courts, commissions and the judges and members of commissions, and above all to abandon condemnation of all conclusions when they differ from selfish desires or opinions based on one-sided and insufficient information. It is for the public to realize that any particular gain, if at the expense of other interests, is no permanent gain at all, that all business or public prosperity is based upon each party to any transaction getting some benefit from it.

During the last ten years more has been done to increase the utility and availability of the telephone service, more has been done to increase its reliability, and greater obstacles have been overcome, than during its whole preceding existence.

What has been accomplished perhaps never will be surpassed, the present contains the germs of the future development.

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For the service of the Bell System, not including toll and long-distance service, the average revenue for exchange service per telephone station, which is the only unit, is $29.81. This average revenue of the Bell System is less than the average revenue of any other comprehensive system in the world, and as there are some abnormally large users of the telephone service in this country, more so than in any other country, it follows that by far the greater part of the 5,800,000 Bell owned stations in the Bell System cost the patron for exchange service less than $29.81 per year. For all telephone service, including toll and long-distance, the average revenue per station is $40.20 per year.

The average investment in plant per station, including telephones and long distance lines, is $152, represented by $132 outstanding capital liabilities, upon which charges are paid. The average gross revenue, for exchange and toll service, of $40.20 per station, is distributed as follows:

Wages to employees (or nearly one-half).	$18.72
Taxes	2.26
Miscellaneous expenses, light, heat, welfare, material, etc	9.62

This leaves a net operating revenue of $9.60, of which $7.75 is paid for capital charges, or an average of 5.1 per cent. on the plant investment, or an average of 5.9 per cent. on the outstanding securities, leaving a surplus of $1.85.

The taxes are considerable and appreciable in amount, but the taxes, while increasing the cost of the service, indirectly relieve the public of the payment of them in some other form. The amount of taxes paid by *privately owned* public utilities annually in the United States is over $200,000,000. The principle involved in the payment of taxes is that they are levied on corporations and franchises and do not increase the individual tax levy. The subscribers who pay for the telephone service contribute to the taxes which otherwise would be levied on all the property of all the people. It is neither a charge in the sense of the service cost nor would the abatement of taxes be any relief to the public—it would be a relief only to the telephone users.

In any enterprise even of small magnitude, capital is as necessary as are employees. Without capital there can be no employment of workers. Without workers there can be no employment of capital. For enterprises requiring as large capital relatively to gross and net earnings as does the telephone service, capital cannot be provided out of revenue nor from any source other than the investor, and then only because it is attracted to the investment. This being so, the question is whether the investment per unit is too great or whether the charges paid on capital are too high. That the investment of the Bell System is actually there has been certified to and confirmed by many examinations and investigations. That the investment per unit is reasonable is proved by the fact that it is considerably less than that of any other comprehensive system in the world.

There are as a rule many ways of accomplishing the same object, only one of which is the best. It is only when the supreme test comes that the best and only the best can be used.

And above all, if there are to be courts of commerce or commissions then the settlement of all matters which have been referred to such courts by the Legislature should be left to them.

The effects of the disturbed business conditions generally prevailing in this country during the past year have not been so serious for the Bell Telephone System as for most industries. Chiefly they were felt in a retardation of the usual growth. Thus the increase in number of subscriber stations was only about 76 per cent. of the number added in 1913, and was less than in any one of the four years previous thereto. This smaller net growth was not so much due to the falling off in new subscribers as to the unusual number of disconnections. Usually for about three new stations added there is a net gain of one station. In 1914 the proportion was nearly four new stations for a net gain of one. In traffic the number of all messages shows the small gain of slightly over 2 per cent.

Telephone Manners

THE following information for its officers and employees has been printed by the National Lead Company in the shape of a folder.

It may afford a suggestion to others.

Telephone Manners

Never forget when answering a telephone call for this office that you are acting as a representative of the National Lead Company.

Always bear in mind that you are not speaking as an individual, but as the representative of a great corporation, and that the interests of its 7,000 stockholders are for the moment in your care.

Whether the caller is a customer or someone merely seeking information, be careful that your words, as well as the tone of your voice, are courteous and agreeable. Keep your wits about you, speak intelligently, enunciate intelligibly and subject the caller to as little delay as possible.

In a face-to-face conversation even a harsh, disagreeable voice and a tactless, clumsy manner of expressing oneself may be offset by a winning smile or an attractive personality. In a telephone conversation this is impossible—the voice alone can convey the smile, and through the voice and the tactful arrangement of words only can we create a pleasing impression.

That politeness which we all recognize as most desirable when speaking with our associates, is *imperative* when talking with an outsider.

If some of these points seem of small importance to you stop and consider what treatment you would like to receive if you were in the position of the person on the other end of the wire. *Be sure* that he is given the same intelligent, courteous attention that would impress you favorably and make you wish to continue business relations with a concern whose personnel rendered such intercourse a pleasure.

"The Voice With the Smile Wins"

Answering a call. Answer the call as quickly as possible. Talk with the lips *almost in the transmitter* (only in this position can the voice be properly modulated). Speak in a low tone, but distinctly, and as pleasantly as you can. First of all say. "National Lead Company, Mr. Blank speaking." Do *not* say, "Who are you?" And never under any circumstances say, "What do you want?" If when you tell the caller who you are he does not tell who he is. say, "Who is speaking?" or "What can I do for you?" If he inquires regarding a subject on which you are unfamiliar say that Mr. Blank can give him more information than you can and request switchboard to connect with Mr. Blank promptly.

If the inquiry is about the delivery of an order do not say bluntly, "It will go to-morrow." Be more suave and say, for example, "I am very sorry, but your order was received too late to get out to-day, but we will do our best and send it as early as possible to-morrow." giving specific information when possible. Never give a blunt, short reply. Always add some little courteous comment. Use freely the words: "Please." "Please excuse it." "Thank you." "I beg your pardon."

When calling anyone who has an exchange *do not* put in a call for him and have him hold his receiver until you answer. Call his company and ask his exchange for him, so that you do the waiting, not he. As soon as he is connected go through the formal announcement, "National Lead Company, Mr. Blank speaking; is this Mr. Blank?" Then state your business.

The Best Customer

A MERCHANT in our town, who desired a change in the location of his telephone without interruption of service, said, "The store is my best friend, and the telephone is my best customer"; which showed that he had the proper appreciation of the telephone.

H. W. COOPER,
Clerk, Installation Dept., Schenectady.

Always On the Job

MISS C. LYNCH, Chief Operator, Astoria, L. I., tells this piece of absent-mindedness on the part of a friend: "A friend of mine, who answers the telephone frequently during the day, was awakened by an alarm clock early one morning, and placing the timepiece to her ear, shouted 'Hello! Hello!'"

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Bell Telephone to Its Stockholders

The A. T. & T. Annual Report for 1914 has been issued. Some of the principal features are as follows:

SUBSCRIBER STATIONS:—

A total of 8,648,993, an increase of 515,976, including 168,177 connecting stations. 2,885,985 of the total were operated by connecting companies.

TELEPHONE TOLL STATIONS:—

70,000 places, from many of which a telegraph message can be sent, are reached by Bell toll lines. This exceeds the number of Post Offices by more than 10,000, railroad stations by 10,000, and regular telegraph offices by about 45,000.

WIRE MILEAGE:—

17,475,594 miles of exchange and toll wire, an increase of 1,364,583. These figures do not include the wire mileage of connecting companies. Of this total wire mileage, 92.6% is copper wire. 9,760,165 miles are underground. The underground conduits represent a cost of $90,000,000, and the cables in the conduits $104,200,000.

TRAFFIC:—

27,848,000 connections a day, not including connecting companies—at the rate of 8,967,000,000 a year.

PLANT ADDITIONS:—

$50,045,316 expended for plant additions, and the estimates for 1915 are $35,000,000. The total amount expended for plant additions in the past fifteen years was $696,960,500. During 1914 $73,091,000 was applied out of revenue to maintenance and reconstruction purposes. The total provision for maintenance and reconstruction charged against revenue for the last ten years was over $504,000,000. The policy of investing the depreciation reserve in revenue-earning plant has continued and the public is getting the advantage of the use of a large amount of plant upon which no dividends or interest charges have to be earned.

EMPLOYEES' BENEFIT FUND:—

20,915 payments aggregating over one and one-third million dollars have been made during the year to employees or their relatives.

FINANCIAL:—

The gross revenue collected from the public in 1914 for telephone service by the Bell System—not including the connected independent companies—was $226,000,000, an increase of over $10,000,000 over last year. Of this, operation consumed $81,400,000; taxes $12,200,000 or 1.54% on the outstanding capital; current maintenance $31,600,000, and provision for depreciation $41,500,000. The surplus available for charges, etc., was $59,300,000, of which over $18,900,000 was paid in interest, and $30,300,000 was paid in dividends.

The capital stock, bonds and notes payable *outstanding in the hands of the public at the close of the year were* $794,714,907. If to this be added the current accounts payable, $26,214,274, the total outstanding obligations of every kind were $820,929,181, as against which there were liquid assets, cash and current accounts receivable, of $87,066,862, leaving $733,862,319 *as the net permanent capital obligations* of the whole system outstanding in the hands of the public.

The number of shareholders, 59,415, is an increase of 3,432 during the year. 52,338 shareholders held less than 100 shares each. A majority of the Company's shareholders are women.

Over 30,000 employees of the Bell System have taken advantage of the opportunity to purchase stock of the A. T. & T. Co. at a low price on installments.

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Address

By Mr. F. H. Bethell, Vice-President, New York Telephone Company

Before the Albany Chamber of Commerce, March 22

BACK in 1878 the American District Telegraph Company, acting on behalf of the Bell Telephone Company, opened the first telephone exchange in Albany, and in November of that year issued "The Telephone Record—Albany and Troy," a copy of which "Record" I hold in my hand. This book contains, in addition to the names of the subscribers in Albany, Troy, Cohoes, and Waterford, a grand total of 359, much useful information for the guidance of the public in the use of the new invention, the telephone. But before passing to that we may find it of interest to check this old book against the latest directories issued by the Company for these growing communities, with a view to locating the pioneer users of the service in Albany. In these books of to-day, containing the names of approximately 23,500 subscribers, having 30,200 telephone stations, there can be found 55 names which also appear in the little old "Record" of 1878. Among these we find—I shall give names of individuals only—

R. L. Banks,
Dr. H. Bendell,
Dr. J. H. Blatner,
Edward Bowditch,
Dr. J. P. Boyd,
W. H. Burton,
Dr. J. W. Cox,
C. H. Gaus,
L. H. Gaus,
Louis Gloeckner,
E. A. Groesbeck,
M. T. Hun,
John Keeler,
J. Laventall,
Daniel McElveney,
Dr. W. E. Milbank,
S. L. Munson.
E. Newcomb,
Dudley Olcott,
A. J. Parker,
J. D. Parsons,
C. Rathbone,
Geo. L. Russell,
L. Sautter,
G. L. Thomas,
Frederick Townsend.
G. M. Tucker,
Dr. G. L. Ullman,
Dr. Vanderpoel,
Dr. Vanderveer,
S. D. Van Natta,
Geo. W. Van Slyke,
W. H. Williams.

"The Telephone Record" of November, 1878, contains directions for using the telephone, from which the following is taken:

After speaking, *transfer* the telephone from the mouth to the ear *very promptly*. When *replying* to a communication from another, *do not speak too promptly, give your correspondent time to transfer*, as much trouble ensues from both parties speaking at the same time. When you are not speaking you should be listening.

Further along, we find:

Subscribers should bear in mind that on a telephone line they are within the possible hearing of a number of ladies and gentlemen. We ask all to be courteous.

If a thunderstorm threatens, insert the metal plug, that is supplied with the bell, in the hole between the two plates of the lightning arrester.

On the next page:

The telephone has far better claims as a saver of time than shorthand. We can hardly realize the immense saving that will ensue when its use becomes universal; some idea can be gained from the fact that the Chicago Telephone Exchange, which started July 2d of this year, has in one day answered 1,921 calls. [The traffic to-day in Chicago approaches two million a day.] Supposing that each call, by the former method of sending clerks or boys, would have taken on the average a half-hour's time, the time consumed would be 960 hours. Allowing liberally

F. H. BETHELL
Vice-President, New York Telephone Company

not more than *two minutes* was consumed by each party communicating by telephone. As every call required two persons' time, there were four times 1,921 minutes, or 128 hours used; adding the work of *eleven* employees at central office and branch stations, averaging perhaps ten hours each, gives a total of 338 hours, which, subtracting from 960, leaves as a net result 622 hours saved to the citizens of Chicago on that one day. But there were only 300 telephones connected, and it should be borne in mind that these 300 points could talk only with *each other*, and we can only leave it to the reader's imagination to judge how much time these same 300 will save . . . when the telephone becomes universal; and if the *reader has any imagination left* let us carry him still further by asking him to take into account that the 300 were all at short distances from each other, and add to the calculation the extra saving when the quarter and half mile distances are *lengthened to four, five and six miles*.

On that rather involved, but no doubt accurate, method of arriving at the time saved, the people of Albany are in these times saving by reason of the telephone 32,000 hours, or 1,334 days, or 3 years and 8 months. every day in the year, which, of course, gives everybody time to lend a hand in the boosting of Albany.

To-day people are talking from Boston to San Francisco, from Chicago to New Orleans, and in fact from every point to every other point in the United States. Thus within a period of some thirty-odd years the people of the United States, in so far as the transmission of intelligence is concerned, have become housed in one room.

In those early days, however, the telephone provided but an auxiliary service, the chief business of the Company being that of providing messengers. In the little book I have shown you appears the following:

It is a noteworthy fact that the messengers of this Company are capable of *hurrying* and even of *running*. . . .

We ask attention to the following list of demands (besides the ordinary one of carrying letters and messages) which *have* been fulfilled:

To Y. M. C. A. for books.
In search of a husband.
To hold a horse.
To search for a carpet layer.
To the Windsor for a lobster salad.
To Briare's for ice cream.
For hymn book.
To wheel baby carriage.
For a mustard plaster.
To escort lady and child to Greenbush.
For wine.
For a minister.
For shirts.
To take child to its grandmother's.
To attend doorbell for four hours.
To buy a chicken.
To borrow a washboiler.
For bird seed.
To attend bar.
For a barber to shave sick man.
For a pail of lager.
To church with flowers.
To find a plumber.
For a demijohn of whisky.
To find a man to clean stove.
And many others.

It is not my purpose to-day to discuss the great development of an art that forty years ago was non-existent; instead, I am going to outline briefly what has been done in the way of developing the army of employees necessary to make useful the tremendous amount of machinery employed in the telephone service, and what steps the management has taken to provide for the health, the comfort and the future of these employees.

In the Bell System there are approximately 160,000 employees. There is no

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State or Territory in the United States that does not number among its citizens employees of the Bell System.

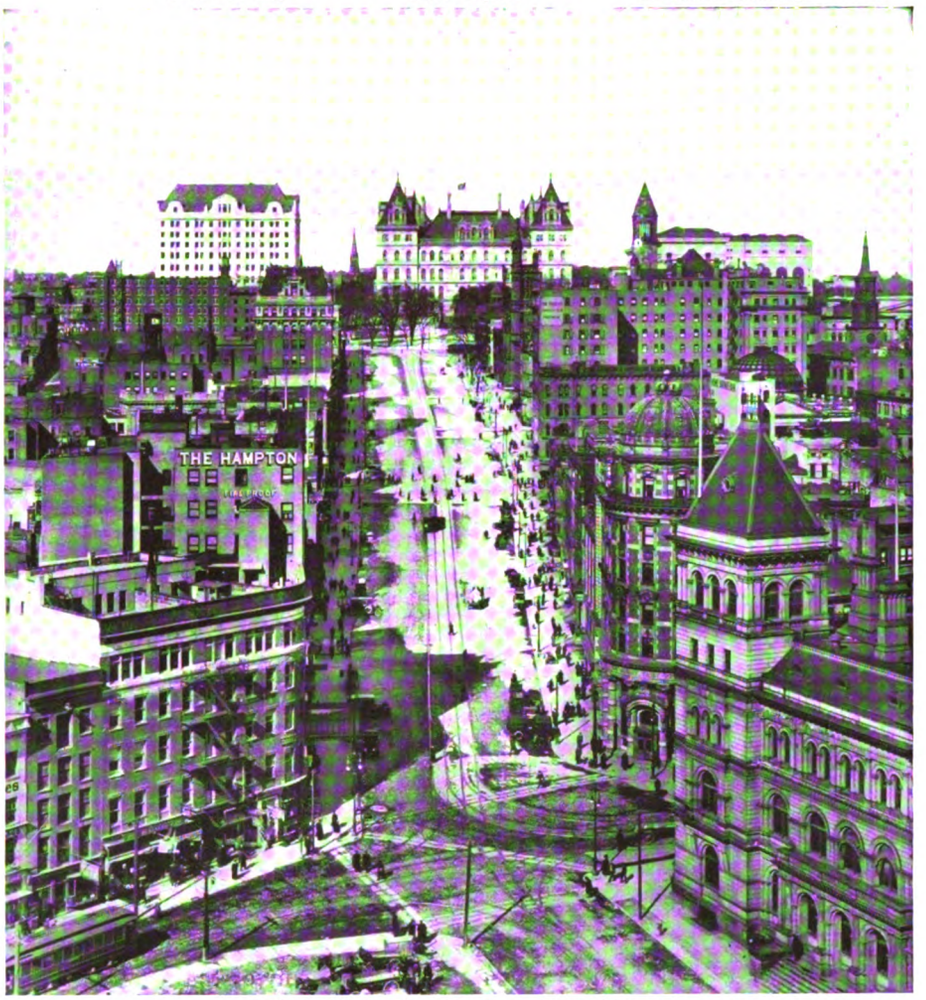
Training Employees

The section of the country in which operate the companies with which I have to do, embraces the States of New York, Pennsylvania, New Jersey, Delaware, Maryland, Virginia, West Virginia, parts of Kentucky and Ohio, and the District of Columbia, and is known as the Eastern Group of Bell Companies. In this group of companies, which, less than two-score years ago, did not exist, there were on March 1, 46,429 skilled employees, of whom 20,270 are men and 26,159 are women. I say skilled employees because of the fact that of these 46,000-odd employees only about 2,500 are listed as unskilled workers. This means that approximately 44,000 men and women engaged in the upkeep and the operation of these telephone properties are skilled workers. They have been taught to do the work assigned them in schools created and maintained by the Company. Telephone operators are schooled for a given period before they are permitted to go to a switchboard; installers of telephone apparatus are schooled in the art of installing telephones before they are turned loose on the premises of our subscribers; the men who splice cables must be taught in the Company's schools before they can be permitted to tinker with the circuits that connect the subscribers with the central offices; the men who sell telephone service must be taught what telephone service is, and, incidentally, what the public has a right to expect from salesmen, before they are permitted to go among the people as the Company's representatives; and so it is with every branch of the work.

The telephone management is proud, and has always been proud, of its army of employees, and in the interest of those employees it has been constantly alert to put into effect plans looking to a betterment of the conditions under which they live and work.

Benefit Fund for Employees

On January 1, 1913, the companies put into effect for the benefit of the employees, regardless of where they are employed, and with not one cent of assessment or other cost to them, a Plan that provides pensions for the old, benefits for the disabled and benefits for the dependents in case of death of an employee.



Capitol Hill, Looking Up State Street, Albany

During the two years since expired, there was paid out under this Plan in the Eastern Group of Bell Companies:

For pensions	$33,770
For sickness benefits	398,159
For death benefits following sickness	85,103
For accident benefits	186,379
For death benefits resulting from accidents	85,608
Total	$789,019

In order to provide funds necessary for this work there have been set aside by the different companies in the Bell System reserves aggregating $8,855,000. The Companies in the Eastern Group, of which the New York Company is one, created reserves aggregating $3,000,000. This amount was transferred from the surplus earnings of the companies; in other words, earnings that had not been distributed to the stockholders in the shape of dividends were given to the employees. The reserves are invested with the companies, and are credited with earnings at the rate of 4 per cent. per annum, computed semiannually.

In order to keep the fund intact, there are transferred from current earnings each year amounts sufficient to restore it to its original amount. It may be interesting to know that during the past two years the sum added to the fund, in addition to its interest earnings, amounted to a fraction over 1 per cent. of the payroll.

Transfers of employees from one Bell Company to another are of frequent occurrence, and to protect the interests of the employees provision is made that when an employee of one company takes up employment in another company his prior service in any of the companies is credited to his record, upon which pensions and benefits are computed.

It has been proven that the establishment of the Benefit Plan has created an *esprit de corps* which is not excelled anywhere, and this has made for a greater efficiency in service to the public.

Compensation Laws

In twenty-three States of the Union compensation laws in one form or another have been enacted. I think without exception our Plan is more liberal than that adopted by any of the States. It is much simpler, and so far as economy in administration is concerned there is no comparison.

The New York State law, which, I think, is about the best law yet enacted, is not so liberal in its treatment of

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employees as is our Plan. We provide benefits for employees in times of illness, and for their dependents after death resulting from natural causes, as well as from accidents. These benefits are not provided for in the New York law.

The Compensation Law provides no benefits whatever during the first two weeks of an employee's disability. Under our Plan, benefits run to the employee from the moment he is injured. Beyond this period the benefits allowed under the Compensation Law amount to just 66⅔ per cent. of the amounts granted under our Plan, or, in other words, under our Plan the employee is entitled to his full wage, whatever it is, while under the Compensation Law he is entitled to but 66⅔ per cent. of it. This parallel continues during the first thirteen weeks of disability, after which the Compensation Law continues at 66⅔ per cent. of the wage, while the Company's Plan drops to 50 per cent. of the employee's wage.

Our experience during the past two years has been that in only 2 per cent. of the cases does disability from accident extend beyond the period of thirteen weeks. Thus it is clear that the employee is much better provided for under the Company's Plan than under the Compensation Law, and be it said for the Plan that it was adopted and put into effect before the Compensation Law was enacted.

Our employees are paid weekly, and prior to the enactment of the Compensation Law an injured employee was paid on the weekly pay date just as though no accident had happened to him and without regard to any legal liability. Since the law was enacted we are permitted to pay directly to the employee the benefits to which he is entitled for the first two weeks of his disability, but after that the employee receives one-third of his benefits direct from the Company on his regular weekly pay date, and he receives the remaining two-thirds indirectly from the Company, through the Workmen's Compensation Commission, but the latter only after the award has been made.

We have no quarrel with the Workmen's Compensation Law, but a routine that requires an employer in good standing to pay his injured employees not directly, but through a commission established by the State, works a great hardship not upon the employer, but, what is of greater importance, upon the workers themselves. It is an actual fact that payments to those employees who have been injured have in many cases been greatly delayed because of commission methods, thus depriving men of their money at a time when they and their families most needed it, that is, during the continuance of their injuries. I am told that the law is about to be amended in a way that will clear up this most serious situation. Speaking for myself alone, I feel justified in saying that, in my judgment, a compensation law can be made effective that will permit employers and employees to work directly one with the other. I believe that the Workmen's Compensation Commission is an unnecessary and expensive piece of State machinery.

Since the Compensation Law went into effect on July 1 last, the New York Telephone Company has paid to its employees in benefits a total of $107,655. The proportion of this amount paid by award of the Workmen's Compensation Commission was $2,066.20, or about 2 per cent. of the total.

Just One Big Family

Since the creation of the Employees' Benefit Fund we have felt more than ever that we are just one big family with every employee having a seat at the family table, and so on January 1 of this year there was introduced a Plan to encourage the employees to become employers as well as employees; or. in other words, to become stockholders in the parent Company, the American Telephone and Telegraph Company. The stock of that Company was offered to the employees at an attractive price and on an easy payment plan, and it was accepted in a manner that was a surprise and a delight even to the officers of the Company. One out of every three employees in the United States who were eligible to purchase stock availed himself of the privilege, and as a result 33,000 stockholders, owning approximately 100,000 shares of stock, have been added to the stock books.

In the Eastern Group of Companies 12,850 employees subscribed for something over 37,000 shares. Of these subscribers 8,000 were men and 4,850 were women, and it was a gratifying thing to us to find when the returns had been analyzed that in this group alone over 3,600 telephone operators—the girls in the central offices—had become stockholders. This group of employees subscribed for something approximating 6,600 shares. Following the operators came a company of over 3,000 men employed in the Plant Department—our instrument installers, cable splicers, linemen, etc. This group subscribed for about 8,500 shares. The men and women in the clerical forces—1,900 of them—took 5,200 shares. Of the total number of employees eligible to subscribe for stock—that is, employees who had been with the Companies for two years or more—61 per cent. of the men and 32 per cent. of the women subscribed.

A striking example of the interest taken appears in the fact that of the 5,040 operators employed in the Manhattan-Bronx Division of New York City, 55 per cent. were eligible to purchase stock, and 54 per cent. availed themselves of the opportunity. In the Hudson Division, the headquarters of which is Albany, 475 employees became stockholders.

Within a month after the Plan was announced many incidents, serious and humorous, developed showing the increasing interest of employees in the Company's property and service to the public.

It is related that a few days ago an office boy was found soundly berating one of his associates, and upon being questioned as to the reason declared that the other boy had allowed the lights in some of the rooms to burn when there was no occasion for it, and that he did not propose to stand for such waste now that he was a stockholder in the Company. While the Employees' Benefit Plan and the Stock Distribution Plan probably stand out more prominently than other things that have been done, they are not by any means the only things that are done in the interest of the employees.

Our Operators

A word about our operators. The Bell Telephone System in its tremendous development has been required to take into its employ a veritable army of young women, it having been demonstrated a great many years ago that boys were not constituted for work in a central office. The public everywhere, knowing but little of what men are doing in terminal rooms, on poles, in manholes, and elsewhere to keep the service alive, have looked upon the telephone operators as representing about 90 per cent. of the telephone organization, the other 10 per cent. being made up of bookkeepers and collectors—especially collectors. These telephone operators, some 50,000 of them, have presented a problem which the companies have set high among the important problems to be solved in connection with our business.

It is important that all things possible be done looking to the welfare of these young women. This interest in them attaches to each individual girl the moment she makes application for a position. It may be interesting to know that in New York City only about 10 per cent. of those who apply for positions are accepted. Every girl who is passed into a central office must satisfy competent and experienced chiefs that she is in every way qualified to become one of this great army. Once in, the girls are protected in every way that can be devised, and at the same time care is exercised not to interfere in any way with their personal liberties. Every telephone exchange, every retiring room, and all places where operators congregate either for work or recreation within the Company's buildings, are kept abso-

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lutely clean. Careful attention is given to ventilation, light, heat, and other conditions that might affect the health or comfort of the operators. The rest-rooms are outfitted in a manner that suggests clubhouses for girls. In these rooms the girls fraternize in a way that develops friendships and associations that extend far beyond the buildings of the telephone companies. Each room is in charge of a competent matron whose duty it is to look after the physical and social comfort of the young women.

A dining-room in competent hands, where tea, coffee, or cocoa is furnished by the Company at its own expense, is also provided; and just now the Company is experimenting in a number of its exchanges with a restaurant service that we hope will develop into something that will be of tremendous benefit to the operators and at the same time be popular with them.

Safety First

We believe that "An ounce of prevention is better than a pound of cure." We believe that "Safety first" is the thing; and, therefore, from time to time we have provided employees with pamphlets written in understandable language giving the causes and the possible prevention of the common diseases—this, naturally, to prevent sickness and to conserve the interests of the employee and the Company. We are constantly striving to prevent accidents and to lessen injury resulting from accidents.

Last year Dr. M. J. Shields, Field Representative of the Red Cross, in a course of 180 lectures talked to over 10,000 of our employees on accident prevention and first aid.

At the present time a permanent employee of the Company, who has made a long and careful study of the causes of accidents, is lecturing throughout all parts of the State, telling construction employees what to do and what not to do to avoid accidents. His talks are illustrated by pictures showing actual occurrences in the past. In 1913 the work of the Company along these lines won for it the American Museum of Safety gold medal presented by the Travellers' Insurance Company to the American employer who achieved the greatest success in protecting the lives and limbs of employees.

Early Telephony in Rochester

By M. S. Baxter, Plant Department, Rochester

THE first central office, at that time called the Telephonic Exchange, was opened for business in March, 1879, on the south side of Main street bridge, in the Ocumpaugh Block. Two rooms in the third story were occupied, the general office being in front, facing Main street, and the operating room looking out on the river. A tower 12 feet high and 8 feet square, surrounded by a cross-arm fixture, was built on the roof for the use of the Telephone Company. The central office occupied a room about 25x35 feet. Extending lengthwise along the room, 8 feet from one side, was the switchboard, 15 feet long and 7 feet high with a depth of 6 inches.

Behind the switchboard a battery room was partitioned off by boards reaching half way to the ceiling. A locker for tools, wire, and apparatus in one corner of the room and the Chief Operator's desk in the other, completed the Plant equipment. The switchboard comprised, first, the calling apparatus; second, the connecting strips, and then the answering jacks. The calling apparatus consisted of three rows of single stroke battery cells. Attached to each bell hammer, and extending upward and outward, was a slender wire from which was suspended by a silk thread a small bead, which swung back and forth at every movement of the bell armature. Just below the bells and extending the whole length of the board were about twenty pairs of heavy brass strips, each pair painted a different color so it could be easily traced at any position of the board. Connected in series with each side of the connecting strip at the end of the switchboard was a hand telephone. The strips were drilled with holes into which the cord plugs could be inserted. Below the pairs of connecting strips was a row of jacks and underneath them an answering strip which was connected to a telephone set on the wall, eight feet distant. This set was made up of a magneto bell, a battery key, a Blake transmitter, and a hand generator. In the battery room were 150 cells of blue vitriol battery. These cells were connected in groups of 5 to 15, in series. One pole of each group was grounded on the water pipes, and to the other pole were connected 5 to 8 outside circuits, selected to give approximately the same resistance for each line in the same group, thus insuring an equal amount of current over each line.

The incoming aerial wires passed from the terminal fixture through hard rubber bushings into the tower. Here each wire was looped and twisted back on itself, forming a mass too thick to slip out through the bushings. Long cleats were placed on all sides of the tower, below the aerial wires, and bored with holes half an inch apart. The inside wire—a No. 16 copper with twofold cotton insulation—was attached to a projecting tip of the line by wrapping it around for several turns. It was carried down into the operating room through the cleats and across the ceiling to the switchboard. Care was taken to keep the wires parallel, taut, and completely separated.

Trouble in the central office was readily located, as every wire was plainly visible and could be traced from the battery through the bell, jack, and inside cleats, to the tower where it could be unwrapped and the trouble located, either in the office or on the line.

Calls to central were made by pushing a button on the subscriber's set. This opened the line and the bell armature was released. When the button was freed the line closed and the bell received a single stroke from the hammer attached to the armature. The movement of the bell hammer caused the suspended bead to vibrate and indicated which of the hundred or more bells was ringing. The central call was always two taps and the subscribers were called with 3, 4, 5, 6, 7 and 8—six stations being considered a full circuit. The call was answered by inserting a flat shoe-shaped plug into the jack, and connecting the wire by a cord and round plug on the other end to the answering strip. The operator stepped over to the wall set, learned what name was wanted, told the subscriber to wait a minute and plugged the line from the answering strip to the connecting strip. He then connected the required line to his answering set, called his subscriber, told him he was wanted, and connected his line to the pair upon which the person calling was already waiting. He called "go ahead" through the hand telephone, which was cut into the circuit, listened a moment to be sure the parties were talking, and then waited for another call. After a short interval, he listened in on the connection and if he heard no one talking, he asked, "Are you through talking?" then removed the plugs and the battery was restored to the lines.

The first central was in fact a common battery call and local battery transmission system, but working on closed circuit instead of on the present open circuit. This office, with many changes of apparatus, was operated until 1888, when it was moved to the Wilder Building and a magneto system installed. In 1900 the first open circuit common battery board in the Western Division was installed in this building.

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One of the Classes in the Supervisors' Instruction Course

Supervisors' Instruction Course

ABOUT 1893 the central office organizations of our Company, then The Metropolitan Telephone & Telegraph Company, began to reach such proportions that the work could not be properly supervised by the Manager, Assistant Manager, Chief Operator and Assistant Chief Operators, and it became necessary to provide a more efficient and better organized supervisory corps in each office. As it did not seem proper to add to the number of Assistant Chief Operators and thus to the direct subordinates of the central office Manager, the number of "Assistants" was limited to one, and an intermediate supervisory position was established, the individuals appointed to that grade being given the title of "Supervisor." Thus, a more efficient, though less direct, line of authority between the central office heads and the operators was established.

In the following years Mr. E. F. Sherwood, then Superintendent of Traffic, laid down the lines of central office organization, introducing load factors and proper methods of forecasting and distributing loads, operating forces, etc., and this as finally completed is without a single significant change the scheme of organization as it exists to-day. That an organization could be evolved, capable of standing intact through almost fifteen years of such growth as the Company has shown, and at the end of that time remain without a substantial change as the best devisable scheme for the purpose, is no mean testimonial to the soundness of the original plan.

While the central office units were small the Chief Operator was able to keep in intimate touch with all of her operators, and the position of supervisor did not at once assume its full importance. As the units became larger and the organization pyramid commenced to spread out, it became increasingly difficult for the Chief Operator to keep in touch with the individual operators. The obvious happened, and the position of supervisor grew gradually from its advisory and assisting character to one of independent authority through which passed the hitherto direct line of communication between the Chief Operator and her force. As the evolution progressed the necessity arose—increasingly evident at first and finally imperative—of controlling and standardizing the working knowledge, methods, habits of work, etc., of the various supervisors. To Miss Schmitt, Manager of the Operators' School, belongs the credit of devising the ways and means of bringing this about.

Miss Schmitt conceived the idea of organizing an advanced course for supervisors in connection with the Operators' School. To think was to act, and so with no experience, but great hope, the first class of about seventy-five supervisors was started on a two-week course, in November, 1913. These classes continued, each for a two-week period, until the month of May, 1914, when they were suspended during the vacation months. They were resumed in November, 1914, and continued until March, 1915, at which time the instruction of all supervisors was complete.

During the period approximately seven hundred and fifty supervisors from the Manhattan and Bronx and nearby divisions had the benefit of the

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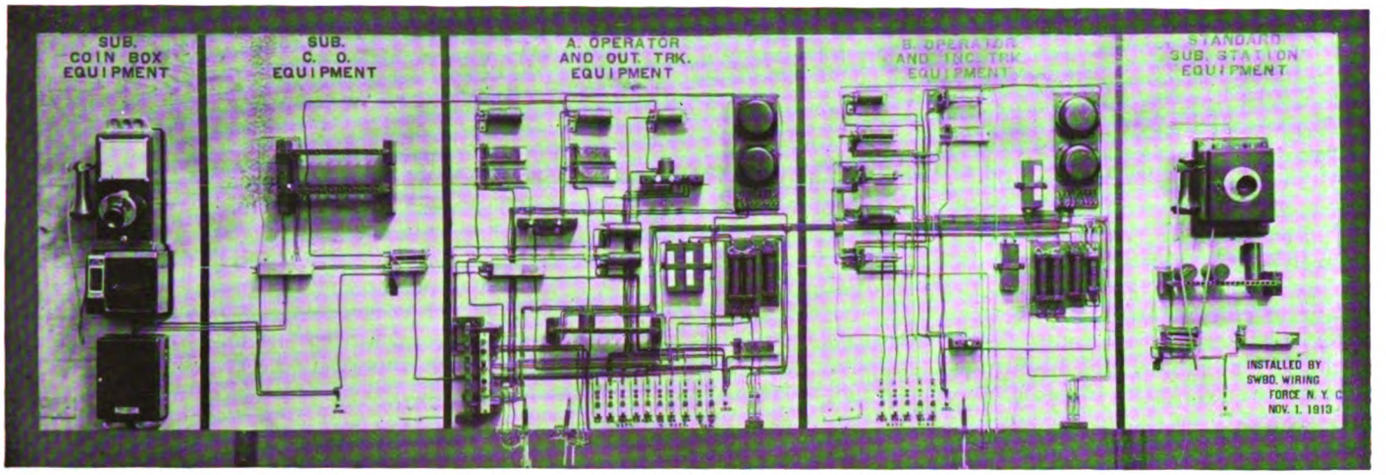

Demonstration Board Used in Supervisors' Instruction Course

courses. The work of these courses was divided into two parts: First, periods of study and discussion of the rules and various matters pertaining to the supervisor's work, and the second, lecture periods, when representatives of different departments and activities of the Company explained the relation of their work to that of the supervisors and vice versa.

In the study periods, many subjects were taken up beside the rules and regulations. The relations between supervisor and operator were gone into at length, and matters of tact, deportment, and discipline were discussed in detail. Supervisors were shown how to so order their work that they might get the best possible result, how to develop material and how to keep a generally healthy spirit of competition and loyalty throughout the organization. They were shown how vitally they are concerned in the development and progress of the organization, and how easily defective work on their part may interfere seriously not only with their own progress but with that of others. In our present scheme of organization the supervisor's responsibility does not end at the office door. As an older sister she must always be mindful of the welfare of the younger members of her official family. If someone is ill and in need of rest, she must know it. If someone is unhappy and in trouble, she must know that also and do her best to smooth out the difficulty. The Company desires and expects the central office to be the one place in the world where the operators would rather work than any other, and looks to the supervisor to do her part in maintaining these conditions. These subjects and many more were discussed in the classes.

In the lecture course the subjects included were "Peg Counts," "Why and How the Telephone Talks," "P.B.X. Work," "Service Observations," "Atmosphere of a Central Office," "Methods of Accounting," "Commercial Methods," etc.

Peg Counts were explained by Mr. Paul Beckwith, District Traffic Engineer, who went over carefully and explained in detail the methods of keeping the record. He showed the relation of the Peg Count to the work of planning the development of the Company, and the consequent necessity for the greatest possible accuracy in the figures. Various sources of error were discussed and a uniform understanding of the various terms and methods was reached.

"How Speech Is Transmitted and Various Points Connected Together" was explained by Mr. D. D. Field, District Traffic Manager. In this course, the nature of sound, electricity, and magnetism was explained and by diagrams and actual demonstration the operation of our apparatus was shown. With the assistance of the demonstration board, on which was mounted all the apparatus essential to a talking and signaling connection between one station and another, a complete demonstration of the operation of the relays, lights, power, signals, etc., was possible.

The "P.B.X." situation and the close relation of these units to the central office work was explained by Mr. Egbert S. Haldene, Chief P.B.X. Inspector. He showed the supervisors clearly how these are actually central office branches and how necessary it is to consider them in that light and coöperate with their operators to the limit of their ability, within the operating rules.

Mr. S. W. Daniels, Chief Service Inspector, explained at length the method of making service observations, the various standards of service, etc. He was able to explain the mystery of the hitherto vague term "Service Tests," and to point out and emphasize that the real function of the test is as a guide and pointer along the road to good service, rather than as a trap for the unwary and inattentive.

The lecture by Mr. J. L. Turner, of the Traffic Rules Committee, having to do with the intangible, yet very real something, the "Atmosphere of a Central Office," described the general principles of central office deportment and the relations of the employees to one another.

On "Accounting Methods," Mr. E. W. Skelton, Chief Toll Supervisor, lectured, explaining the importance of accurate timing and checking, and how vital to the proper relation of the Company to the general public is the necessity for great care in this feature of our work.

Mr. F. W. Hearn, Local Commercial Manager, in explaining line order work, etc., made clear a feature of the Company's activities that had never before been explained to supervisors.

The benefit from these courses has not been as intangible as might at first be supposed. As course followed course, the first feeling of wonder as to the results to be derived from the work gave place to a feeling of considerable satisfaction. Successive classes came along, each member of each class showing at the beginning a different idea of supervisors' duties and responsibilities, and in the end, all finishing with a uniform understanding of what the Company expects of its supervisors and the aim and scope of their responsibility.

D. D. F.

A New Use for the Telephone

MANY persons who have witnessed "The Birth of a Nation," now running at the Liberty Theater, New York City, and who understand that this production was the work of practically one man, Mr. W. D. Griffith, wonder how he was able to direct the thousands of men in the battle scenes, and will be surprised to know that the telephone was utilized most extensively. Mr. Griffith, who is practically the general in this case, had before him a switchboard equipped with ten circuits which terminated at different parts of the field where his assistants were located, and in this way directed the vast army.

E. I. BALDWIN,
Traffic Inspection Dept., Manhattan.

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Our Operators

Some Instances of Their Invaluable Services

HOW much depends upon the telephone operator is seldom realized until some emergency brings it home. This is true, notwithstanding the articles appearing in the newspapers and magazines almost every day, calling attention to the prompt service, quick intelligence, and heroism of the telephone girl. "Out of sight, out of mind" seems to be the general attitude toward the operators until some moment of need when they alone are able to render aid. That they have never failed to do so in such an emergency is as remarkable as it is true, and while they do not always receive the credit due them, even on such occasions, their service is generally recognized by those who are benefited, and thus the public is growing more and more accustomed to accord the operators their meed of praise.

A few instances have occurred during the past month which illustrate this.

Before mentioning them, however, it might be worth while to speak of a service sometimes expected of the operators which they should not be called upon to perform, and that is the answering of inquiries for information regarding the location of fires. In the first place, it is no part of the operator's duty to know where there is a fire, and every time she is called upon for this information, there is a possibility that she may be delayed in the completion of some important call for help. If a person is concerned in the fire, and wants information about it, it would be so much easier, and the information would be so much more complete, if someone near the fire, police or fire headquarters, or someone else in a position to know, were called up. This would take only a few seconds of the operator's time, and leave her free to complete other connections. Cases like the following, which illustrate the efficiency of the operators, also suggest the thought of what serious consequences might have resulted if these operators had been tied up answering calls for information regarding fires, instead of performing their proper duties.

On March 14, at 11.20 P.M., a call by number was received at a central office in the Westchester Division, for Western Union. As the Western Union office was closed, the call was taken up by the Night Chief Operator, who volunteered to connect the calling party with the nearest open office. The calling party stated that he was a physician at a certain New York hospital, and that it was very important for a message of some kind to be sent immediately to a man whose wife was in the hospital, at the point of death. It was found that the husband of the dying woman did not have a telephone, but the Chief Operator was able to reach the police officer who was on duty nearest to the address given, and at 11.38 the officer reported that he had delivered the message. At 11.41 the man himself called up and thanked the Chief Operator for the interest she had taken in the matter, and then talked with the doctor at the hospital in New York.

At 6 P.M., on February 7, when answered by the operator, a subscriber stated, "This is 795 Fulton street; my house is on fire." That was all. The matter was referred to Miss Sandoz, Supervisor in Charge, who transmitted the report to fire headquarters. Subsequently, the following letter was received from the subscriber:

> Will you kindly give my thanks to the telephone operator who was on duty last Sunday evening, February 7, about 6 P.M., and who handled my telephone call when a fire occurred at my residence, 795 Fulton street, Jamaica. I am crippled, and it would have taken a great deal of time for me to have sent the alarm in the regular way, and in the meantime, the fire might have done great damage. As soon as I discovered the fire, I called up the operator, and explained briefly what I wanted, and wanted quickly. The matter was so ably handled by her that the fire department had the fire out in less time than it would have taken me to have reached the fire box to send in the alarm. Therefore I feel it my duty to the New York Telephone Company, and to the operator in particular, to thank you for the able manner in which the call was handled in time of danger to life and property. Again thanking you, and promising you that I would never be without a telephone again, I am, Yours sincerely, (Signature).

Another emergency call, which was not so dramatic as the foregoing, but nevertheless important, occurred about midnight not long ago, when a call was received for the fire house in a village near New York. Owing to the nature of the call, the operator asked if she could be of any assistance to the calling party, and if it was desired to report a fire. The reply was, "No, but our water pipes have burst, and the cellar is flooded, so I thought the fire department might come down and pump the water out."

The *Saranac Lake News*, of March 25, contained an article headed, "Kept Switchboard Despite the Smoke," which described how Miss Nellie Quirk, of the Mountain Home Telephone Company, stuck to her post all through a fire on the floor below. The paper claims that "Saranac Lake telephone girls are just as plucky as those of other places," which shows that the bravery of telephone operators is a matter of local pride. The fire did not reach the central office, but the operating room was filled with smoke, and in the words of the newspaper quoted, "Miss Quirk was nearly overcome by the smoke and fumes, but bravely answered the multitude of calls and queries as to the location of the fire, until relieved by two other operators who lived nearby. After a few minutes' rest and fresh air she returned to her duties for the balance of the night."

The training of the operators does not find its only expression at the switchboard, however. On Sunday afternoon, March 21, Miss Ruth White, a student in the Operators' School of Buffalo, was riding in a trolley car when a collision occurred with an automobile. Two ladies and the chauffeur in the automobile were thrown to the street. Finding that the injured persons were receiving only such attention as the occupants of the car were able to give them, Miss White quickly stepped up to one of the ladies, and asked to which hospital she wished to be sent. The reply was, "The Homeopathic." Miss White then ran to a nearby store, and called the hospital; in a very few minutes the ambulance arrived upon the scene. This case had much in common with curiosity calls about fires. Everybody was standing around just asking questions, while the operator was busy obtaining help.

About midnight of February 5 the people of Port Chester were awakened by the ringing of the fire bells and blowing of whistles. They were greatly excited when it was learned that the Abendroth Foundry was on fire.

Driven by a strong wind, the smoke arose from the building in great clouds and, combined with the flames, which shot high into the air, gave the people the impression that the entire plant was engulfed.

Fearing that the fire would spread throughout the plant, the Fire Chief summoned the Rye and East Port Chester departments, and companies from Greenwich and Mamaroneck, who responded promptly, confining the fire to one large building. The loss was estimated at $25,000.

Two day operators and the Chief Operator reported at the central office as quickly as possible. Owing to the heavy downpour of rain and the slippery condition of the streets, progress was slow and many persons fell on the icy pavements, as was the case with one of the operators who reported at the office. While she did not hurt herself in falling, she received a thorough ducking, for the streets were flooded at the time.

Assistant Manager E. D. Chard, who lives in Greenwich, Conn., heard the

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whistle blowing and, when he ascertained from the Night Chief Operator that assistance had been asked from surrounding towns, he immediately telephoned for an automobile and reported at the office.

The metropolitan newspapers gave great and deserved prominence to the manner in which Miss Grace Leech, an operator, and Miss Mary M. Gildea, a supervisor, at the Flatbush office, made possible the saving of three lives on March 28. After completing a connection, during the preliminaries of which the calling party had evinced great excitement, Miss Leech answered a flash on the line by cutting in, when she heard the exclamation that someone was dying. The response came, evidently from a physician, that he would be unable to reach the house in less than three-quarters of an hour, and advised the calling of some physician near by. The called subscriber then hung up, and Miss Leech, hearing groans from the calling station, referred to her supervisor, Miss Gildea, who, after obtaining the necessary data from Information, rang several doctors living near the calling party. Miss Gildea then notified Police Headquarters that an ambulance would probably be needed, and in about seven minutes from the time he was called, one of the doctors reported to Miss Gildea from the residence of the subscriber. The three occupants of the house, a man and two women, were all unconscious from gas which was pouring out of a large water heater and an open gas jet in the cellar. The women were revived, after an hour's work with the pulmotor, and the man was removed to a hospital, where it was thought he would recover.

According to one of the New York papers, "Physicians said that had Miss Gildea not traced the call and persisted in getting quick aid, the three must have died. . . .

"Dr. Keyes, who so promptly responded to the call for assistance, said: 'Mary Gildea is a heroine; she deserves a Carnegie medal.' "

Main Society

THE 159th meeting of The Telephone Society of New York was held at the United Engineers' Building, Monday, March 22. The attendance at this meeting was the largest there has been at any meeting of the Society this year, and was brought out by the announcement that Mr. B. Gherardi, Engineer of Plant, American Telephone and Telegraph Company, would be the speaker, and that his subject would be "Our Ever-changing Telephone System." Mr. Gherardi reviewed some of the recent large advances in our constantly developing telephone plant and service, illustrating his address with lantern slides. Mr. Gherardi's address was received with interest and enthusiasm, and it is understood that his paper will be read before the up-State societies later on.

After the meeting, the usual reception was held, during which the Bluebell Orchestra played. A number of out-of-town visitors were present.

Hudson, Central and Western Sections

MR. J. S. WILEY, General Auditor, was the speaker at the up-State Sections in March, and Mr. P. O. Coffin, Auditor, who accompanied him, also addressed the meetings. Mr. Wiley's subject was, "The Telephone and the Community." The meetings were held as follows: Albany, March 16; Syracuse, March 17; Buffalo, March 18; and Rochester, March 19. Mr. Wiley's paper was in his usual interesting and instructive vein, and elicited a lively discussion at each of the meetings.

In Buffalo, a male quartet, composed of Mr. E. C. Griswold, first tenor; Mr. L. N. Handorf, second tenor; Mr. J. R. Carson, first bass, and Mr. J. V. Poss, second bass, sang some of the latest song-hits, and the Balduf brothers played a number of duets on the violin and piano.

Inter-Departmental Coöperation

By Carl T. Itschner, Salesman, Yonkers Commercial

TROUBLE-HUNTER H. J. Sands, Yonkers, was sent to clear some trouble on the line of a wholesale grocer, who had an individual line and one extension. While Mr. Sands was at work on the job the subscriber said that he expected to move to a larger plant, and that he would install some sort of an intercommunicating telephone system there. Mr. Sands asked him why he didn't make a contract for a P. B. X. service which would afford intercommunication throughout the premises, and also give him the benefit of incoming and outgoing calls at all stations. This, however, did not seem to interest the subscriber. As soon as Mr. Sands returned to the office he told me about the case, and I undertook to secure the contract. The building into which he was to move was in course of construction, and for three months, while the work was going on, I nursed my prospect. At first, it was pretty hard work, because he had made up his mind that what he needed was intercommunicating service, and one line to the central office would be sufficient; but I was able gradually to show him the advantages of our system which affords both intercommunicating and exchange service, and the benefits which would follow a larger use of the telephone, with the result that the contract was finally signed.

The first thought of this kind of service was put into this subscriber's mind by Troubleman Sands, who also advised me of the case. This is another illustration of the effectiveness of coöperation between departments.

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A Transcontinental Reception by Telephone

Wives of Officials and Their Friends, Guests at Headquarters

THE wives of the officials of the American Telephone & Telegraph Company and a number of their friends were guests at a very unique and unusual reception held Friday afternoon, March 12, in the offices at No. 15 Dey street.

The purpose was to enable the ladies to talk over the transcontinental line to San Francisco, but the affair very speedily assumed the nature of a social function. Tea was served and the ladies quickly took hold of the situation and converted what might have been a more or less businesslike affair into a delightful social gathering.

The equipment which had been installed for the formal opening of the transcontinental line on January 25 had not been removed, and the ladies appreciated the unusual experience of talking across the continent.

Mrs. Union N. Bethell extended the greetings of the ladies at the reception to the ladies of the Pacific Coast, and expressed their cordial good wishes for the success of the Panama-Pacific Exposition. In response, Mr. G. W. Peck, one of the Bell System's representatives at the Fair, extended greetings and good wishes on behalf of the officials of the Pacific Telephone & Telegraph Company and the representatives of the American Telephone & Telegraph Company at the Panama-Pacific Exposition to all of the ladies at the New York end of the line.

Mrs. J. J. Carty entertained some of the guests with vivacious accounts of her interesting experiences and conversations with Dr. and Mrs. Bell, and their two grandsons, when these two little boys had their first talk to San Francisco.

Mrs. Marsters was present at Jekyl Island on the occasion of the official opening of the line, January 25, when Mr. Vail talked from Jekyl Island to San Francisco.

Mrs. Chas. E. Scribner told San Francisco that she was one of the first women to talk over the New York-Chicago telephone line and regarded herself as a real telephone pioneer.

Everyone was given an opportunity to talk to San Francisco, and an interesting feature of the affair was the singing of "Annie Laurie" across the continent, by Mrs. Louis K. Comstock, of Upper Montclair. Mrs. Comstock was introduced by Mr. U. N. Bethell, and she remarked that on a former occasion she sang "Annie Rooney" over the long distance telephone line, but that the song would probably now be considered out of date. She has a clear, sweet, soprano voice and San Francisco announced at the end of the song that every word was heard plainly. This was the first time anyone ever sang across the continent, and aside from its significance in this respect, it added a delightfully novel touch of variety to the interesting experiences of the afternoon.

MRS. LOUIS K. COMSTOCK
of Upper Montclair
The First Person to Sing Across the Continent

Among the responses from San Francisco was "It's a Long, Long Way to Tipperary," played on the cornet.

Arrangements were in charge of Mr. B. Gherardi and Mr. James Robb.

The Reception Committee consisted of Mrs. Union N. Bethell, Mrs. John J. Carty, Mrs. Nathaniel T. Guernsey, Mrs. Chas. G. DuBois, Mrs. C. H. Wilson, Mrs. Arthur K. Marsters, Mrs. Chas. E. Scribner, Mrs. A. L. Salt, Mrs. Frank B. Jewett, Miss Thurber.

Those present were:

Miss Allaire, Mr. and Mrs. H. D. Arnold.

Mr. and Mrs. W. F. Baker, Mr. C. R. Bangs, Mr. and Mrs. U. N. Bethell, Mr. O. B. Blackwell, Mr. and Mrs. R. H. Boggs, Mr. T. D. Bowen, Miss Bowen, Mr. and Mrs. H. S. Brooks, Mrs. L. K. Bulkley.

Mr. and Mrs. A. Cameron, Mr. and Mrs. J. J. Carty, Mrs. H. C. Cocke, Mr. P. O. Coffin, Mr. Chas. D. M. Cole, Mr. and Mrs. E. H. Colpitts, Mrs. L. K. Comstock, Mr. and Mrs. E. B. Craft.

Mr. and Mrs. H. E. Darling, Mr. F. L. Devereux, Mr. and Mrs C. G. DuBois, Mr. and Mrs. F. B. Driscoll, Mrs. John S. Durand.

Mr. J. D. Ellsworth.

Mr. and Mrs. W. E. Farnham, Mr. W. J. Farquhar, Mrs. G. J. Ferry, Mr. and Mrs. D. A. Frank.

Mr. H. G. Green, Mr. B. Gherardi, Mr. and Mrs. J. H. Gordon, Jr., Mr. W. S. Gifford, Mrs. E. W. Goldschmidt, Mr. and Mrs. R. H. Gregory, Mr. and Mrs. Nathaniel T. Guernsey, Mr. and Mrs. E. A. Gurnee, Miss Bessie Gurnee.

Mr. H. A. Halligan, Mr. and Mrs. E. T. Holmes, Miss Holmes, Mr. and Mrs. Sidney W. Hopkins, Mr. Ford Huntington, Mrs. R. P. Huntington.

Mr. L. R. Jenney, Mr. and Mrs. F. B. Jewett, Mr. and Mrs. J. W. Johnston, Mr. R. L. Jones.

Mr. J. S. McCulloh, Mr. and Mrs. H. G. McCully, Mr. and Mrs. J. L. McQuarrie, Mr. and Mrs. A. A. Marsters, Mr. and Mrs. G. H. Merrill, Miss Miller, Mr. and Mrs. John Mills, Mr. G. D. Milne, Mr. and Mrs. L. F. Morehouse.

Mr. and Mrs. F. G. Nelson.

Mr. M. H. Orth, Mr. H. S. Osborne, Miss Osborne.

Mr. and Mrs. John H. Peck, Mr. T. J. Perkins, Mr. and Mrs. F. A. Pickernell, Miss Pickernell, Mrs. Frederick Pleasants, Mr. and Mrs. J. R. Pollock, Mr. and Mrs. F. Powell.

Mrs. Rainey, Mr. J. C. Rennard, Mrs. Erman J. Ridgway. Mr. James Robb, Mr. and Mrs. C. A. Robinson, Mr. and Mrs. C. T. Russell.

Mr. and Mrs. A. L. Salt, Mr. and Mrs. A. D. Scovel, Mr. and Mrs. C. E. Scribner, Miss Scribner, Mr. and Mrs. H. E. Shreeve, Mr. and Mrs. H. Blair-Smith, Mrs. R. A. C. Smith, Miss Smith, Mrs. N. A. Smythe, Mrs. John Spillman, Mr. and Mrs. H. F. Stevens, Mrs. F. A. Stevenson, Mr. and Mrs. T. P. Sylvan.

Mr. and Mrs. D. C. Tanner, Mr. H. B. Thayer, Mr. and Mrs. I. J. Thorp, Mr. H. F. Thurber, Miss Thurber, Mrs. E. W. Townsend.

Mr. and Mrs. J. L. R. VanMeter, Mr. and Miss VanWyck, Mrs. Arthur S. Vaughan.

Mr. K. W. Waterson, Mrs. Wheeler, Mr. J. S. Wiley, Mr. and Mrs. C. H. Wilson, Miss Margaret Wilson.

Mr. and Mrs. G. L. Yates.

The Romance of the Wires

CHANCE and the telephone wires combined to bring together two long-separated comrades when a citizen of Nyack, N. Y., had occasion to call up a business firm in New York City some time since. According to an interesting account of the incident in the Nyack *Evening Star*, two "boys in blue" had fought side by side in the Civil War, had helped repel Pickett's charge at Gettysburg, and had been through the fierce conflict of Cold Harbor, but with the end of the war they had been separated and had lost all track of each other. When Mr. Wallace, a resident of Nyack, called up a New York house on business, the name of the man who answered and the tones of his voice completed a circuit of memory in Mr. Wallace's brain. The man at the other end of the line was soon identified as his companion of many battlefields, and by this queer turn of Fortune's wheel the two were reunited after years of separation.

The romance of the wires is never gone.

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Fire in Rapid Transit Subway Damages Underground Telephone Cables.

By A. L. DuBois, District Inspector, Southern Manhattan

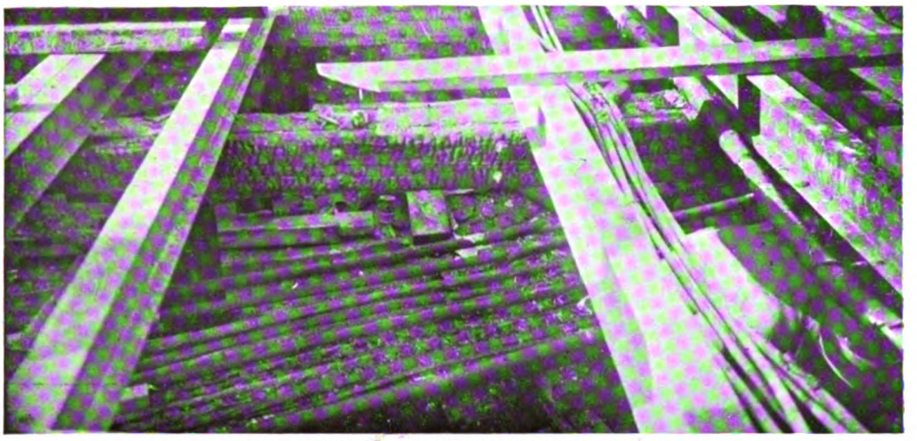
SIXTEEN miles of new Rapid Transit subways are being constructed on Manhattan Island to care for increasing traffic, due to the rapid growth of the city. The greater portion of this construction work is on Broadway, Lexington avenue, Church street, West Broadway, and Seventh avenue, and is being carried on by the "cut and cover" method.

As the work progresses it is necessary to support the telephone cables temporarily from street timbers and in this condition they are subject to mechanical injury and damage from fire or water. The most serious trouble, from a telephone standpoint, that has been encountered in connection with this work was the fire which occurred on March 15 in the new subway at Seventh avenue, between Forty-second and Forty-third streets, completely destroying all telephone cables at that point.

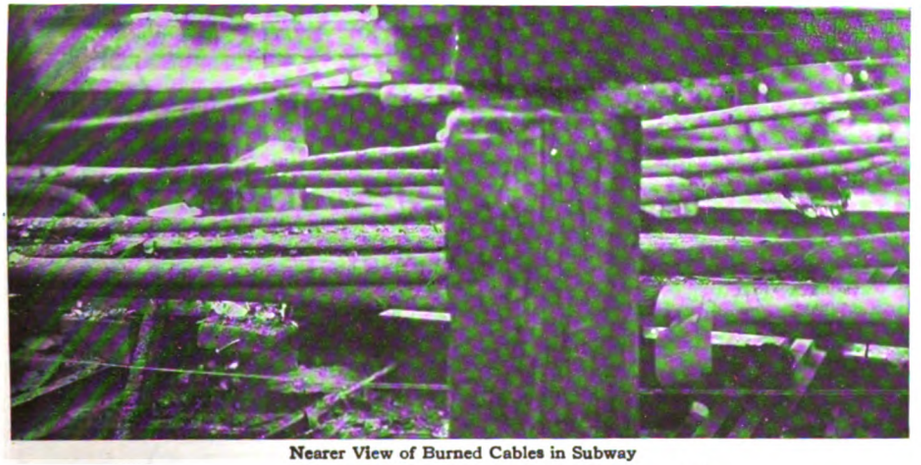
The rapid restoration of service on order wires, trunks, and subscriber lines was due to the good judgment exercised by the night force in diagnosing the trouble, to the prompt notification of all concerned, to the splendid coöperation of the different forces, and the efficient work of the individual members of the cable, inspection, and central office forces. The efficiency with which this work was handled can best be shown by following the steps taken by each force after the first indication of trouble was noticed. The value of a well-organized force is clearly demonstrated.

On March 15, at 4.05 A.M. Senior Nightman Jones reported that steady guard signals on trunks and steady line lamps on Bryant subscriber lines were coming in rapidly. This condition indicated cable trouble, and the insidemen in the various central offices were instructed to report immediately the number of steady guard signals on incoming trunks. In the meantime a fire alarm had been turned in from Forty-third street and Broadway, and Splicing Foreman Smith was called and given a preliminary report of the fire and of the indicated cable failure. From reports received, it was learned that there were two hundred steady guard signals on trunks in adjacent offices which, in connection with one hundred steady line lamps in Bryant, indicated a serious cable failure in the Bryant District.

An insideman was sent out from the Bryant central office to investigate the fire, and it was learned that the shoring and timbers were burning about our cables in the new subway on Seventh avenue, between Forty-second and Forty-third streets, with every indication that all cables at that point would be destroyed. The complete emergency organization was now in motion, and the alarm was being sent out to all parts of the city and adjacent suburban territory on Long Island and New Jersey, to Plant supervisors, and the regular emergency force. Wire Chiefs were calling out central office men and laying plans for the temporary restoration to service of order wires and trunks. Splicers and helpers were being called, and all arrangements were being made to restore the cables to service.



Burned Cables as They Appeared from the Street



Nearer View of Burned Cables in Subway

At 6 A.M. a complete round-up of the city had been made, and it was found that two 600-pair subscriber cables in the Bryant district, two 300 and four 400-pair trunk cables had failed, making a total of 3,400 pairs of wires. The subscriber cables carried 450 working lines and the trunk cables 1,800 working trunks and order wires. There were thirty-seven complete groups of trunks and seventy-five order wires entirely out of service. The men who had been called were now arriving at the scene of the fire and at the central offices throughout the city, and the Empire City Subway Company's men had started to remove the burnt wood from around the cables and open adjoining sections of the street in order to allow the splicers to get at the cables. Arrangements had been made to have automobile trucks in readiness at the Pierce Avenue Storeroom and to have cable and cablemen available so that the necessary cable could be shipped as soon as the requirements were known.

When Supervising Foreman Spiller reached the scene of the fire, he made an inspection and found that the fire had

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Looking North on 7th Avenue at 43d Street, Burned Section on Right

Looking West on 43d Street at 7th Avenue. Street Covering Removed to Permit Splicers to Work on Telephone Cables

melted the lead sheathing and burned the paper insulation on all of the cables for a distance of about twelve feet. Fortunately, however, the copper conductors were intact.

As soon as the Fire Department stopped throwing water on the fire, splicers and helpers were ready to raise the burned cables and place short sections of new cables alongside, preparatory to restoring conditions. A splicer and helper were stationed at each end of each cable, with one or two helpers in the center, and immediately a wire was cut in the burned cable and spliced to a wire in the new, which had been selected, the burned wire was traced back through the burned section by helpers and was thus identified at the other end where it was spliced to the new wire. This procedure was followed throughout, with the exception of one of the 600-pair subscriber cables. It was found that this cable had only 100 pairs of wires terminating beyond the trouble, so it was cut in order to give service to the subscribers working between that point and the central office. The wires of this cable terminating beyond the trouble were identified from the terminals and spliced up by test from the central office.

The first work of the central office force was to restore service on the order wires and then follow this up with a sufficient number of trunks so that 50 per cent. of each group would be in service. This was done by re-routing the circuits through other central offices on spare cable conductors and by using existing trunks where no spare conductors were available. As the situation developed, additional men were transferred to the congested points and at 10 A.M. all order wires and a large number of trunks had been restored to service and the number of groups of trunks entirely out of service had been reduced from thirty-seven to seventeen. A continuous test of the subscriber cables was kept up and all lines that tested O.K. were closed through and immediately placed in service. A close watch was kept of the guard signals on incoming trunks and as fast as they indicated that the trouble had been cleared, they were tested out and placed in service.

Conditions Under Which the Splicers and Helpers Worked

The inspection force notified all subscribers in the Bryant district, whose service was affected, of the cause of the trouble and the probable time at which service would be restored. Where large private branch exchanges were involved, temporary emergency batteries were installed so that local service could be given and some of the most important lines, such as the New York *Times*, were restored to service by building the lines to terminals of cables not affected by the fire.

At 6 P.M., 75 per cent. of the circuits had been restored to service either temporarily or permanently and it was definitely known that all cables would be restored early the following morning. Arrangements were, therefore, made to have sufficient extra force report at 6 A.M. to remove all temporary work and test out all circuits without delay.

At 8 A.M., March 16, all temporary work had been removed and all circuits had been restored to service on their original conductors.

The enthusiasm with which the work was carried on was very noticeable; many of the central office men reported for duty without stopping to get their breakfast, the splicers and helpers worked through their lunch hour and took only one-half hour for supper, and several of the night inside men worked through until late in the afternoon.

In twenty-six hours from the time the first indication of trouble had been noticed, 3,400 pairs of cable conductors had been spliced through new sections of cable and what had been the worst cable failure experienced in New York since the Fulton street fire on April 6, 1904, was a thing of the past. This record could not have been made without the heartiest coöperation of all forces, and the results are a true indication of the loyalty of each employee who, when the necessity arises, can be depended upon to do his best.

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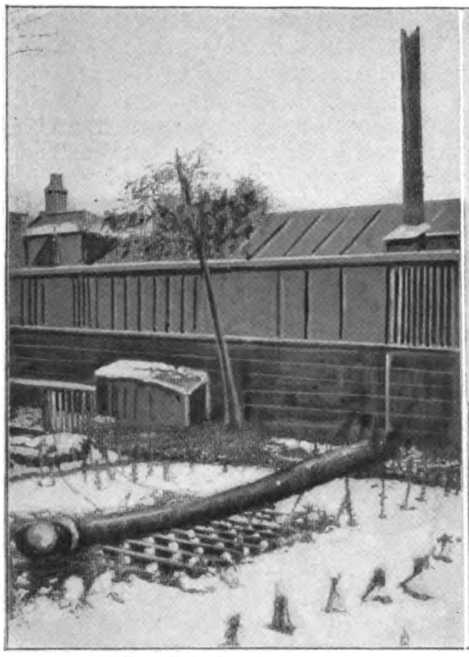
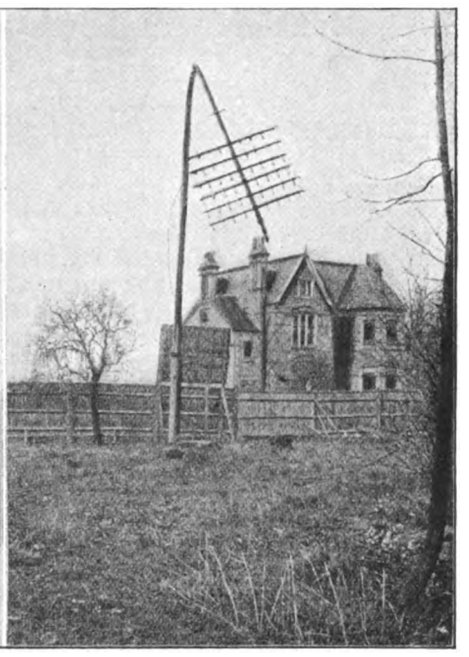
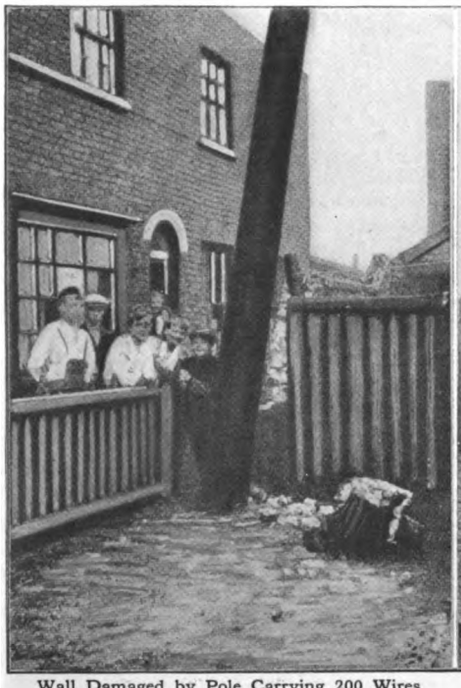


60-Foot Pole Carrying 97 Wires Broke in Two

100-Wire Junction Route



Iron Pole, National Telephone Co.'s Pattern, Carrying 64 Wires



Wall Damaged by Pole Carrying 200 Wires at Bermondsey Wall

Heavy Pole Carrying 96 Wires

Pole Carrying 50 Wires

Illustrations Reproduced from the TELEGRAPH AND TELEPHONE JOURNAL, London

Restoring the Service

ONE of the worst storms experienced in London in recent years, according to the *Telegraph and Telephone Journal* of London, struck the city January 22. It was accompanied by a heavy fall of snow which ranged from 2 inches at Ealing, 4 inches at Battersea, and 6 inches at Sydenham, to a slightly greater fall a little farther south.

The telephone wires became encrusted to the extent of from ¾ inch to 1½ inches. The principal damage was done to the South London exchanges. In all, 11,819 subscribers were affected, 144 junctions, and 344 miscellaneous, making a total of 12,307.

The *Telegraph and Telephone Journal* says:

Practically the whole of the heavier routes acquired from the National Telephone Company, supported either on very high poles or on roof-standards, and carrying anything up to 120 wires each, were partially destroyed. Not a very great number of poles or standards were actually broken, but it was quite the exception to find any which had not been more or less deflected from the perpendicular, while the conductors were either lying in complete contact on the roofs of buildings or hanging in bunches from the supports. At street crossings the wires had been cut away by the police and other persons, so as to prevent damage to wheeled traffic and foot passengers. Notwithstanding the extent of the damage, it is gratifying to be able to state that no injuries to persons took place, although there was considerable damage to private property.

It is stated that the work of restoration was put in hand without delay, but for the first few days the energies of the workmen were mostly taken up in pull-

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ing into safe positions poles and wires which were threatening the public safety. Several days more were occupied in renewing and re-staying the main route poles, "for until this was done," the magazine states, "no good purpose could be served by mending the endless number of broken branch lines." Preferential treatment was then given to War Office, fire alarm, doctors' and hospital circuits.

The article states that the progress in restoring faulty circuits was considerable, but not so great as it would have been had not nearly a thousand workmen joined the colors. However, 117 Royal Engineers were obtained from the War Office on loan, and by drafting all available workmen, etc., from the north to the south of the Thames, it was possible to place 569 men, divided into 97 gangs, at work upon the renewals.

The following rate of progress in restoring service is given in the article:

Subscriber circuits interrupted by the storm of January 22.....	11,819
Subscriber circuits faulty January 24...	9,302
" " " " 30...	7,083
" " " February 6..	4,510
" " " " 13 ..	2,340

Before the end of February things were practically normal.

It may be interesting right here to refer to our March 1 storm of last year which wrought such havoc, especially in the New Jersey Division. As a result of that storm there were in New Jersey 38,286 telephones out of service. By March 7, 21,020 were restored, leaving 17,266. By March 14, 13,187 additional were restored, leaving 4,079. By March 21, 2,514 more had been put back into service, leaving 1,565. By the end of the month there were only 331 still out of service and these were restored very soon thereafter.

There is another difference between the condition in New Jersey and that in London, and that is the difference in the territory affected. In New Jersey the damage was not confined to the cities, towns, and villages, but extended throughout the country districts which, owing to the snowfall, were in many places almost inaccessible. According to the locality, the snowfall ranged from one to two feet, while snow drifts sixteen to twenty feet high were no exception.

Another instance of the speed with which emergencies are met and work performed by our Company is described in an article printed in this issue regarding the damage to our underground cables in Manhattan by the fire of March 15 in the Rapid Transit subway. This fire put out of service 3,400 pairs of cable conductors, which were restored within twenty-six hours.

Employees Talk to San Francisco

AS many employees as possible have been given an opportunity to talk over the transcontinental line to San Francisco from headquarters in New York. During a portion of the forenoon of each day, for about two weeks in March, small groups, totaling about 1,500, enjoyed this privilege and thus participated in celebrating the wonderful triumph of science. Among them were many employees who have been in the business almost ever since it began, and familiar as they are with the marvelous developments that have taken place within their recollection, their amazement was almost boundless. It was remarked that probably these employees were able to appreciate this achievement more than the average employee, and very much more than the average citizen, for the very reason that they have been able to see the development of the art of telephony from its beginning. It was very impressive to watch some of these old timers talking 3,400 miles, and to reflect upon the fact that, as Mr. U. N. Bethell has said, "Each one has contributed something toward its accomplishment."

Special mention should be made of the very remarkable conversational powers of Mr. H. A. Leslie and Mr. Mr. H. U. Linkins in San Francisco, who day after day answered hundreds of fellow employees speaking from the other end of the line in New York.

It must be remembered that San Francisco is three hours earlier than New York, and as the talking began at 9 o'clock each morning, New York time, it meant that one or the other of these two gentlemen, and perhaps both, had to be on the job at 6 A.M., San Francisco time.

The favorite questions of the New Yorkers were, "What time is it in San Francisco?" and "What time did you breakfast?" The Panama Exposition, the state of the weather, and similar topics were the subjects of most of the brief conversations.

Miss Mabel S. Bliss, of the Legal Department of the A. T. & T. Company, afforded variety and astonished the Coast with this impromptu limerick:

There is a 'phone system called "Bell,"
Which is working remarkably well;
From ocean to ocean its lines now extend.
Will wonders and marvels ne'er come to an end?
No, not while there's the System called "Bell."

Mr. F. L. Devereux, Auditor of the A. T. & T. Company, recalled the blizzard of 1888, which occurred in March of that year, or just twenty-seven years ago. At that time New York, for a day, was practically isolated from the rest of the world, and the only way that Boston and New York could communicate with each other was via cable to London. Since that time the Boston-Washington underground has been built and the continent spanned by telephone wires.

The celebration in March, 1915, marks not only the advance in long distance telephony, but an advance in every department and phase of the science.

Carelessness, the Enemy of "Safety First"

A GREAT many accidents never occur, through the merest chance, and not because they are guarded against. For example, a boy in my own office recently emptied a receptacle containing pins into a wastebasket. He would probably been very much surprised if he had learned that somebody had got a bad case of blood-poisoning through his carelessness. There is a rule against putting broken glass into wastebaskets, but pins are equally dangerous. This is merely an illustration of lack of forethought, and as the incident made such an impression upon me when it occurred, I feel it is important that the attention of all employees should be called to the danger which lurks in acts of carelessness like this.

Another case which I recall was that of a clerk who was seated under a shelf containing a number of heavy volumes. One day another clerk in replacing one of the books failed to see that it was secure. It slipped, slipped, slipped, a little at a time, until it fell upon the head of the man below, and he was laid up for several days in consequence. Let us unite, and do our utmost in teaching others to be careful, and always impress upon the minds of careless people the great necessity of "safety first," now and all the time.

CHARLES P. KNUDSEN,
Construction Dept., L. I. Plant.

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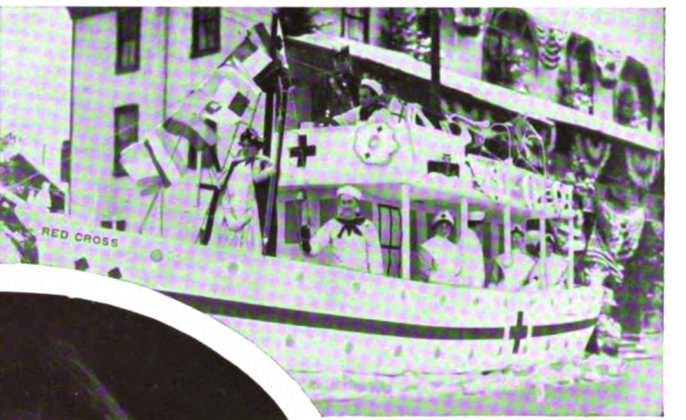
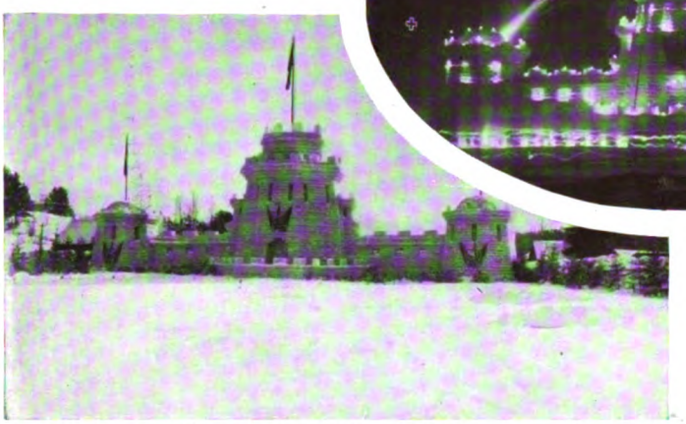
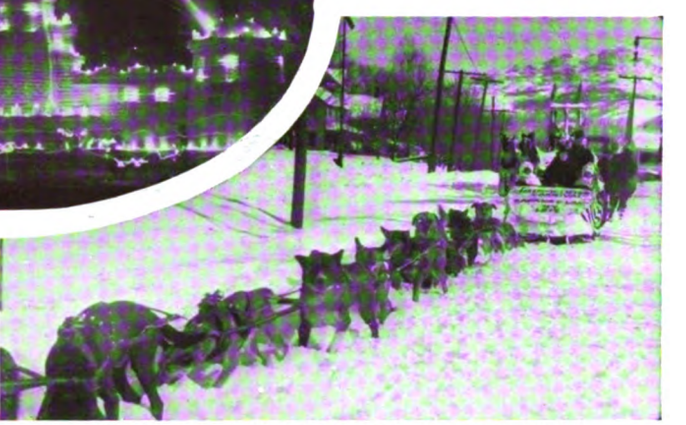
Corner of Broadway and Main Street, Crowd Following the Carnival Parade



Tne Winning Float. Dr. Trudeau's "The Red Cross Ship"



The Famous Ice Palace by Day



"Caribou Bill's" Alaskan Dog Team Drawing a Float

(Picture in center) "Storming of the Ice Palace," a Wonderful Effect Produced by the Combination of Fireworks, Ice, and Snow at Night

The Winter Carnival and the Telephone at Saranac Lake

By E. A. Stonaker, Superintendent of Traffic, Mountain Home Telephone Company

ON February 2, 3, and 4, the tenth biennial Winter Carnival was held at Saranac Lake, N. Y. This "Mardi Gras of the North" is probably the most unique celebration or festival held on this continent. In no other place on this side of the Atlantic, or on the other side either, this year, is there built such an elaborate ice palace.

The three days of the Carnival are given over to celebrations and entertainments showing the beauties of the winter season and the health-giving sports which can be practiced while earth is covered with snow and ice. The Carnival held this year was the most successful in the history of this custom. Preparations were started months ahead and the whole population outdid itself in paying homage to "King Winter."

On February 2 the buildings and residences on the principal thoroughfares were decorated with evergreens, bunting, and electric lights, and the huge palace had been erected entirely of ice and as large as a Fifth Avenue mansion. The night before, King Winter had been good to his subjects by graciously covering the trees with a thick layer of snow, so the whole village was in gala attire.

On the morning of the first day, the grand parade of decorated floats was held, prizes being awarded for the most ingenious, the most beautiful, and the most grotesque exhibits. Prizes were also given for the best decorated buildings and residences.

Every afternoon of the Carnival the championship meets of the International Skating Union were held, and the amateur outdoor skating championship of this country and Canada was decided. Russell Wheeler of Montreal carried off the honors this year, both Edmund Lamy of Saranac Lake, unbeaten champion for several years, and Robert McLean of Chicago, champion last year, having joined the professional ranks.

On the first night of the celebration a masked costume carnival on skates was held and prizes were given for the best costumes of different kinds. On the second night a masked ball was given. Every night the ice palace was illuminated by colored electric lights, and on the last night occurred the storming of the ice palace. The storming by the boys of the village and the defence by the Adirondack guides was carried on by means of all kinds of fireworks, and the combination of the pyrotechnic display and the ice and snow presented a spectacle which was a fitting climax to the Winter Carnival of 1915.

A brief description of Saranac Lake will be of interest, and of its telephone development, which did much to facilitate the arrangements for the Carnival.

"The Metropolis of the Adirondacks," the village is called, and well it may be, for here in the very heart of the Adirondack wilderness, nestled at the foot of its towering peaks, bisected by one of its rushing rivers, and surrounded on all sides by its pine clad forests, is a modern

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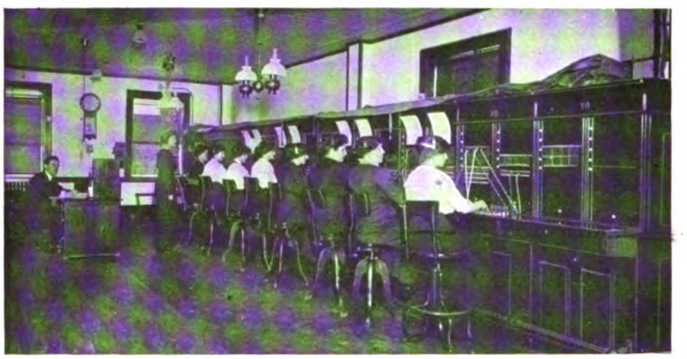
up-to-date village of some 6,000 inhabitants. Two railroads, the New York Central and the Delaware and Hudson, enter the town; there is a modern electric light plant in operation, an excellent sewerage system, a water system, a modern gas plant, and, most important of all, the Mountain Home Telephone Company, which serves some 1,200 subscribers from a Western Electric No. 10 common battery ten-position board. There are several up-to-date hotels and probably the only apartment hotel in any American city of less than 100,000 inhabitants.

Dr. E. L. Trudeau came to Saranac Lake in 1874, a victim of tuberculosis. He found a small hamlet of about fifty or sixty log and frame houses, and a population of three or four hundred, in order to reach which it was necessary to take a forty mile stage ride from the nearest railroad station. Settled about 1820 by Jacob Moody and a few years later by Capt. Pliny Miller of Albany, a veteran of the War of 1812, it had become, when Dr. Trudeau arrived, the center of the lumbering interests, the headquarters for the lumbermen of that district, and the starting point of the spring drive of logs down the Saranac River to Plattsburg.

In its surrounding forests, Dr. Trudeau found, in very truth, "tongues in trees, books in the running brooks and good in everything." Regaining his health, he determined to send out his doctrine of hope to others similarly afflicted. "With a courage as intrepid as Ney's," said Hamilton Wright Mabie in the *Outlook* of April 28, 1906, "he has accomplished a work which puts him in the front rank of scientists in his field, and has rendered a service to his generation which places him among the foremost public men of America."

Thirty years ago he founded his wonderfully successful cottage sanatorium, the first of its kind in this country. Twenty-five years ago he built here the first laboratory in the United States for original research in tuberculosis, and the fame of his work and his institutions has spread the name of Saranac Lake throughout this country and abroad. Following in Dr. Trudeau's footsteps, others have established sanatoria, at Lake Kushaqua, at Rainbow Lake, at Gabriels and, for the State, at Raybrook, all near Saranac Lake.



Mountain Home Telephone Company's Switchboard at Saranac Lake

The first telephone service of any kind in Saranac Lake was given by a Mr. F. M. Bull, who established a small switchboard in his pharmacy and had a line running out to Bloomingdale and Rainbow Lake, localities a few miles distant. The call for central was "Hello, Bull." In 1893, Mr. Bull died and Mr. F. M. Jackson, then local manager of the Postal Telegraph Company, and Mr. Joseph Merkel, took over the telephone business. The number of subscribers, then about ten, was ultimately increased to about thirty.

In 1897 the business men of the town got together and formed the Franklin Telephone & Telegraph Co., of which Mr. F. E. Kendall was the first president. Mr. Alfred Donaldson was the next president, and during his term of office he was greatly aided by suggestions from Mr. J. C. Lynch, now General Superintendent of Traffic of the Bell Telephone Company, of Pennsylvania, and at that time Traffic Engineer of the New York Telephone Company.

In 1903 the Hudson River Telephone Company bought control of the Franklin Company, and in 1909 control passed to the New York Telephone Company. Service up to this time had been given from magneto boards of various types, but in the winter of 1909-10 the Number 10 Western Electric common battery board was cut into service.

In the meantime, competition in the telephone business had sprung up in Saranac Lake. A local organization, known as The Mountain Home Telephone Company, was formed in 1906 and started to give service from a Dean common battery board. In 1913 the Mountain Home Telephone Company took over the competing properties in the four northern counties of Clinton, Essex, Franklin, and St. Lawrence, and the properties at Saranac Lake were consolidated in the former New York Company board, an additional section being added for the purpose.

Thus is universal service being given to this community of winter enthusiasts, well named, for, as an old Adirondack guide is fond of saying, "We have only tew seasons here, y'know, winter and August."

CLASS OF THIRTY-FIVE STUDENTS WHO HAVE JUST COMPLETED THEIR COURSE IN THE BUFFALO SCHOOL FOR OPERATORS

Sitting—from left to right: The Misses J. McCulle, M. Schuster, E. Baker, A. Day, M. Harrison, G. Colleran, C. Borne, **M. McMurtry, S. McGann, F. Sautter, H. Otto and M. Linn.**

Standing—from left to right: **The Misses I. Rapp, J. Brown, C. Fraser, G. Hartmetz, A. White, C. Schamberger, A. Collins, D. Smith, E. Whitehead, M. Kanane, A. Whitwell, E. Haettich, V. Lennon, M. Carney, K. Robb, E. Garland, J. Hall, V Robinson, A. Gould, A. Smith, E. Danner, E. Geising and M. Markman.**

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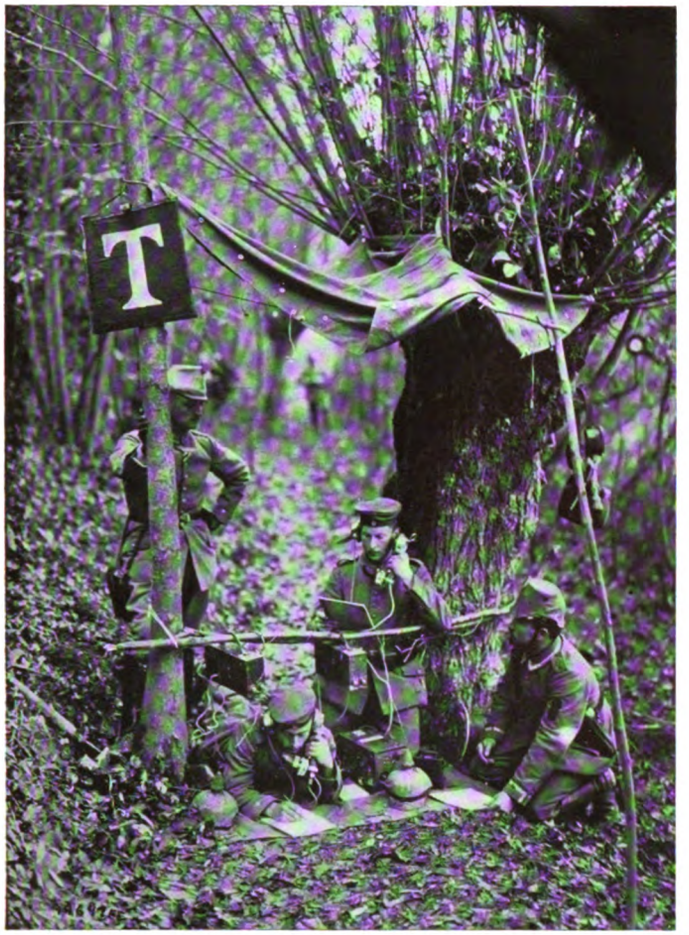
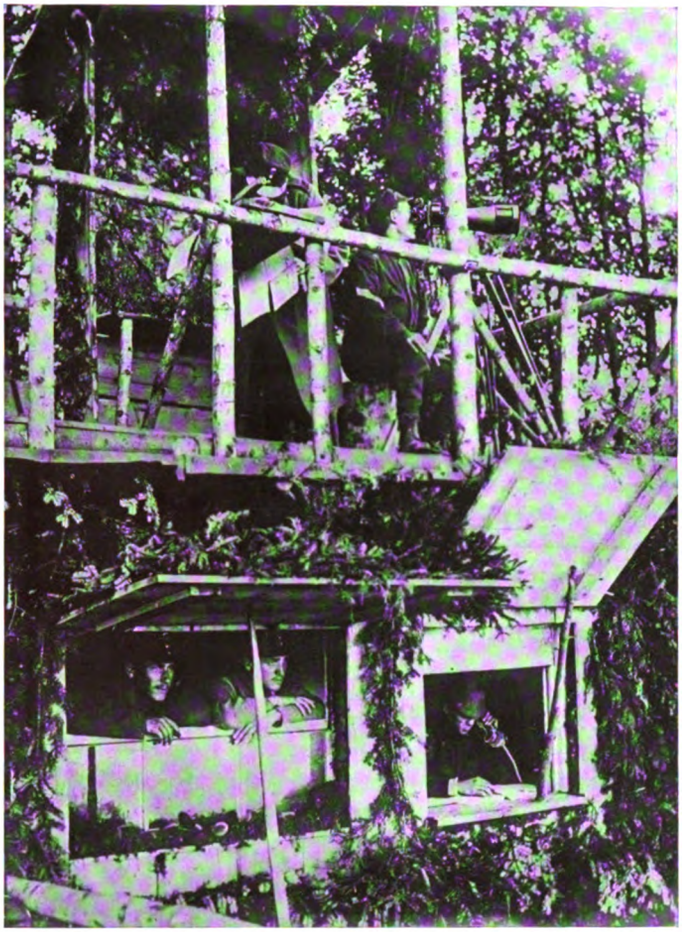


The Last Battle at Soisson. A Telephone Station in the Battle Area Established by the Germans along the Aisne. The "T" Is a Warning to Friendly Range Finders



French Observation Tower on the Swiss-French Border. Craftily Concealed in the Woods, with Telephones Connecting with Headquarters

The Telephone in War

THE telephone service in the war, both at the front and at home, is repeatedly referred to in the English publications from day to day and week to week. Some new aspect or adaptation of the service, or some striking example of heroism, is constantly appearing, to emphasize the importance of this service in military tactics to-day.

The Nation, an English periodical of wide influence, commenting editorially upon the functions of the aeroplane as a scout in the war, pays this tribute to the telephone:

Our ships off the Belgian coast and the big land guns of both sides have done nearly all their work under the direction of the scout in the air and the equally modern development of the scout or spy who does his work with a portable field telephone. The telephone is a more familiar and less romantic adjunct of warfare than the aeroplane, but it is probably even more valuable.

The *Telegraph and Telephone Journal*, the official organ of the English wire service, says editorially in its March issue:

A typical example of the value of the telephonic system and of the heroism which is required to maintain it is given in the *Daily Chronicle* of February 8 in describing the action before Givenchy: "There is now no secret about the system of telephones by which orders are transmitted to trenches and observation posts. At a certain spot before Givenchy, where at that time the advance trenches were between 300 and 400 yards from the support trenches, a wooden peg, invisible to the enemy, and even to an airman, marked the spot where the telephone wires to various points were intertwined in a bunch about a foot below the surface in a case. Just about dawn the enemy started throwing a few common shells. As luck would have it, one struck the earth close to the wooden peg."

The junction box was destroyed, and it seemed probable that communication with the advance trenches was cut off. A soldier-miner set out to repair it, although the half-hour's work involved almost certain death. "With his appliances in a knapsack on his back and rifle in hand," continues the report, "he crept round a traverse, but had not gone many of the 200 yards which separated him from the goal before German bullets began to sing.

"The officer told off the best shots in the company to do their best with the enemy snipers, who were firing across an open patch of marsh between our advance trenches, while he watched the telephone repairer gliding like a snake over the boggy expanse. The light was still comparatively dim, but through his glasses the officer saw him reach the place where the peg had been and begin digging himself down. Meanwhile shrapnel shells were falling fast, and the bark of the British service rifle answered the rattle of German musketry. The officer saw the daring man more than half enearthed, apparently manipulating the nest of wires as if with difficulty. Next moment communication was restored, and from several quarters came through the warning that there was great activity behind the German lines, and they seemed to be massing in force for an attack. The warning came too late to enable us to get up sufficient reinforcements to be ready for the massed attack, for it was launched only a quarter of an hour after the adventurer by his magnificent courage had mended the telephone junction-box.

"How attack after attack was launched on Givenchy has already been described; but what would have happened if the advance trenches had found themselves cut off from communication just at the crucial moment? That quarter of an hour's warning may have done more toward tightening our hold on threatened Givenchy than can ever be properly realized. And what became of the little adventurer across that deadly space to the 'telephone-box' of the advanced trenches. In the shock of battle he was lost sight of; and up to Friday last was missing."

The *Telegraph and Telephone Journal* continues with a tribute to the women of the service who are showing their heroism at home:

Beside the heroic deeds of the battlefield and the histories of lives sacrificed so bravely and, alas! so freely, the lesser heroisms of the Service at home lose some of their luster. But we cannot omit to record with pride and pleasure the behaviour of the telephonists at those places which have been favoured with the unwelcome attentions of the Germans. Voluntary pre-

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sence at a post of some danger, and intrepid progression through the streets of a shelled town to take up duty, are actions which show that the women of the service are not found wanting when the call comes.

Specific illustration of this truth is found on another page of the same issue, where the German bombardment of Yarmouth and other coast towns is described. During the raid all electric lighting was cut off by the authorities and for a short time the exchange was plunged in darkness. Candles were soon obtained and the unusual flow of traffic was handled with the assistance of two day telephonists. "Mention should be made," says the account, "of the conduct of Miss Ward (Clerk-in-Charge) and Miss Emmerson (Telephonist), of Yarmouth, during the air raid of January 19. They had gone off duty and were at home at the time of the raid, but, at great personal risk and without being sent for, both returned to the exchange and remained on duty until normal conditions obtained. They have been specially commended."

These examples of the essential urgency of telephone service and the loyalty of those who render it are but fragments that reach this country. The use of the telephone in the actual operations, in the moving of troops and the forwarding of supplies, as well as in the organization and preparations being carried on at home, has attained an importance nothing short of marvelous. The realm of surgery, however, seems to be as remote as possible from the field of telephone usefulness, but this versatile instrument is now being successfully employed for locating bullets in the wounded.

The problem of the best way to find and extract bullets has grown to considerable dimensions in the present war, and a method suggested by Alexander Graham Bell in a paper read about 1881 or 1882 is now being used. Professor Bell said at that time that an apparatus could be used which "consists of a telephone to one terminal of which a fine needle is fixed, and to the other a plate of metal of the same nature as the needle. The plate is placed on the limb to be examined, and the needle is thrust in where the bullet is believed to be, and when it strikes the ball a galvanic battery is formed within the body . . . This will cause a click to be heard in the telephone each time the bullet is struck."

Tracing a Bullet by Telephone

Sir James Mackenzie Davidson took up the suggestion and his experiments proved very successful. The *Electrical Review*, January 8, 1915, reports this eminent scientist as stating that the telephone can be advantageously used for locating a bullet by connecting one terminal to a moistened electrode which is applied to the patient's skin, and the other terminal firmly to a metallic instrument such as a probe or forceps. Directly the probe touches metal embedded in the tissues a grating sound is heard in the telephone, due to the voltaic cell thus formed. This method, especially when employed in conjunction with stereoscopic photography, greatly reduces the time occupied in the search and the disturbance to the patient's tissues.

As reported in the *Literary Digest* for March 13, 1915, Sir James states in *The Lancet* (London, January 30) that the method is now in use in European military hospitals, and adds among other things that:

> With the aid of the telephone he [the surgeon] can always keep in touch with . . . [the boundaries of the bullet]. whatever the surgical instrument he may be using at the time; and, finally, by means of his forceps he should be able to remove it through a comparatively small incision and with the least possible disturbance of the parts. . . . The special value at the present moment of such a procedure as the use of the telephone needs no insistence, and I believe that the time will come when no surgeon will attempt to remove a deeply embedded metallic body without having this telephone attachment at his command."

Binghamton's New Building

THAT the Bell system builds for the future is recognized in Binghamton, N. Y., where a new telephone building was recently opened. Not simply as an improvement in the telephone equipment but as a pledge of the Company's faith in Binghamton and its future, this building is welcomed by the people of the city and by its press. The large, dignified building, its simple, strong architecture and general air of stability, the suitability of its design to its purposes, all typify the significance to the community of the essentially sound and progressive business of the company. The Binghamton *Republican-Herald* comments editorially on the new building and its meaning to the city, in these words:

> The Bell Company is officered by sagacious men. . . . When a community calls for a new central installation. the chiefs of the telephone interests look that city over pretty carefully. If it is due to stand still, they take measures accordingly, as telephone installations are mighty expensive. But if they decide that the city is due to grow, they plunge on new equipment. The men of the Bell interests who decide such matters are better judges of the causes and effects of municipal growth than most any other set of men in the world. They have to be.
>
> When the Bell interests hint broadly by their investments that Binghamton will need a 17,000-station telephone service before the present building is out-dated, it means that they have wagered scores of thousands of dollars in expensive equipment against the growth of Binghamton. They do not take such chances without reasonable assurances of a good return upon money invested. If they did it very often, they would not hold their jobs in such a well-organized corporation.
>
> The big new Bell building, with its provision for a bigger, better and busier future for Binghamton, is one of the finest arguments for the prosperity of Binghamton that has appeared in a long time. In addition it is an ornament to the city.

The building is at present a three-story structure, but is designed to permit the erection of additional stories, as well as further enlargements at the rear and along the east side. The capacity of the new switchboard is 8,800 lines and 17,000 stations, and the present equipment of 3,900 lines and 8,000 stations requires a total of 65 operators. Only 17 years ago the former building of the Company was opened with a force of 15 operators, and was considered adequate for an indefinite period, but it was outgrown several years ago, the Commercial Department having been in another building for four years.

A rather significant side-light on the attitude of the community toward the Company is traceable in the closing paragraph of an enthusiastic and detailed "write-up" of the cut-over and the new building in the news columns of the *Republican-Herald:*

> Not only is the building an improvement to the business district of the city, but it is a matter of civic pride that much of the work in constructing it was done by local contractors.

This manifest interest of the city in a new expression of our telephone development is one of the inspiring things about our business. For our work is an integral part of the life of the city, and essential to its growth and prosperity. Consequently, the more fully we realize the high standards at which we are aiming, the more fully can we command the respect and support of the community in which we work.

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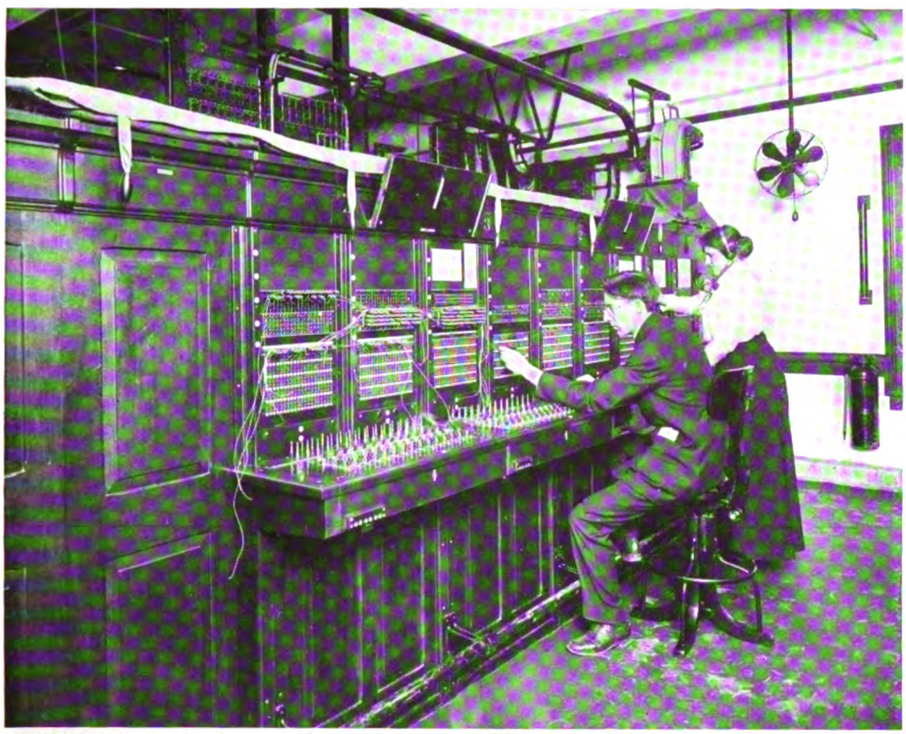
Boonton and the Cut-over

By F. J. Van Wagner, Assistant District Traffic Manager; A. A. Vescelius, Local Commercial Manager, Morristown; and J. H. York, General Plant Foreman

LYING among the hills of northern Jersey five hundred feet above sea level is the town of Boonton. There can be no doubt about the beauty of the place, for one has but to stand and watch the falls of the Rockaway River in the very center of the town, to be impressed. After passing over a perpendicular fall, this immense volume of water flows over a succession of rapids making in one-half mile a total drop of one hundred and fifty feet. On each side of this deep cut in the hills, tower immense pines which add their distinctive beauty to the spot.



MISS E. M. CARMAN, Chief Operator and W. J. CLEELAND, District Plant Foreman, Testing the New Western Electric Common Battery Switchboard at Boonton Before It Was Cut into Service

Early History

The first settler on the tract now known as Boonton was Christian Loweree, who in 1766 built his house on Sunset Hill. As the settlement grew it became known as Old Boonton, after Governor Boone who was governor of the colony from 1760 to 1762. The existence of iron ore was discovered near Boonton early in its history, and here was established the first iron works in America, where cannon balls were produced for the Revolutionary Army, as well as farm implements and domestic utensils. More than once, while at Morristown, General George Washington visited the works to inspect its various processes.

The completion of the Morris Canal gave Boonton its first impetus toward prosperity. The canal was opened for navigation from Boonton to Newark in 1831, and from Easton to Jersey City in 1836; and it was no time after this before the iron industry was in full swing. In 1848 the first anthracite blast furnace in Boonton was built under the supervision of Samuel Thomas, of Catasauqua, Pa., one of the great iron masters of his day.

The first post office was established in 1846. Prior to this time people had to go to Parsippany for their mail, a circumstance which necessitated a walk of over three and a half miles. Despite this inconvenience the population of Boonton was doubled in the years between 1834 and 1840, increasing from 400 to 800. In 1900 there were 4,710 residents of the town, in 1910 there were 4,930 and now the population is about 5,200. The school system, which to-day forms one of the attractions of Boonton as a place of residence, had its beginnings in 1832, when the first schoolhouse was erected.

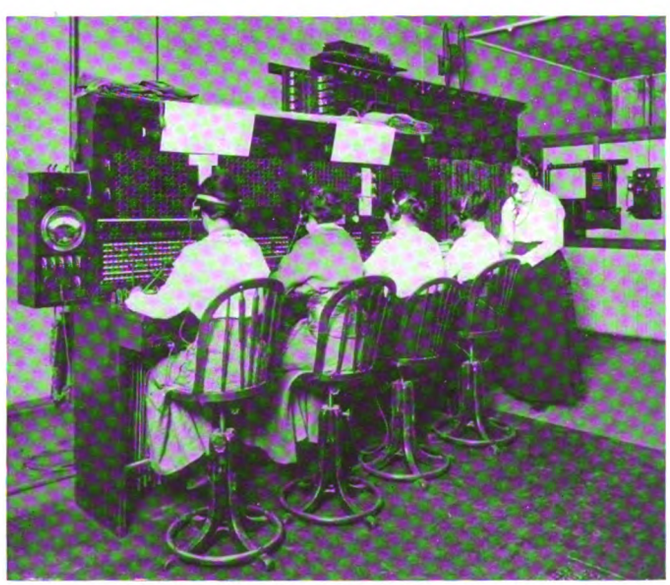
Boonton—1915

As already mentioned, the Morris Canal passes through Boonton, the boats being carried down a drop of two hundred feet by a series of locks and planes. It is a rare sight, however, to see canal boats nowadays, the railroads practically eliminating them as freight-carriers. In seasonable weather both the Morris Canal and the Rockaway River afford a great deal of pleasure to canoe and rowboat enthusiasts.

During the past few years the town has experienced a commercial boom and is taking big strides ahead. A well-equipped fire department with numerous conveniently situated stations, and an up-to-date police department afford ample protection to the inhabitants. The Mayor and Common Council comprise the governing body, and much of the progress of the town is due directly to the enthusiasm of these officials. An active Board of Trade whose object is to "boost" Boonton, is doing much to make the town an increasingly attractive and desirable place to live in, as well as an important industrial center. Hundreds of workers are employed in the manufacturing plants of the town, among which the most prominent are the silk mill, iron foundry, hosiery factory, lace mill, and Knox hat factory.

Mountain Lakes

Mountain Lakes, a community served by the Boonton central office, consists



The Old Central Office and Magneto Switchboard

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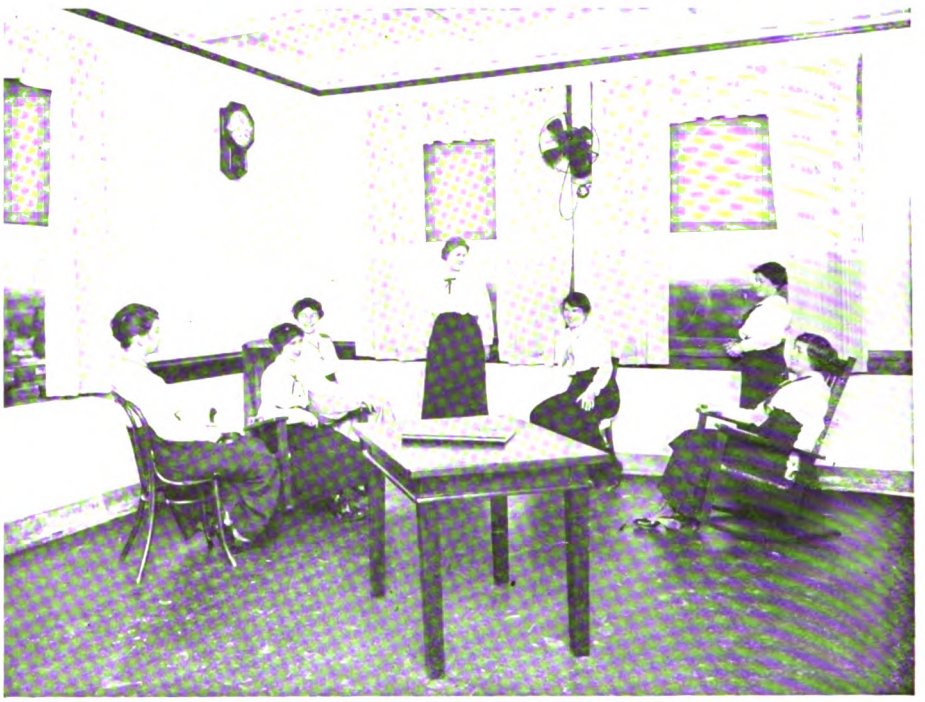
of one thousand acres of park, recently developed from wild, wooded hill, into an unusually attractive colony.

The first house was occupied in December of 1911, and since then the development has progressed most wonderfully. To-day there are over two hundred and fifty houses, most of which are occupied. Mountain Lakes now has an all-year residential population of 1,500, and despite the depression of business, which is noted all over the country, fifty-five houses have been sold during the last year. This development is considered the largest near New York, and its organization is most complete. When completed ten years hence, it will rank in population and improvements with the best of New Jersey's suburban towns. To-day it is a self-sustained community with every facility for comfortable living.

It is interesting to note that the telephone development in the Mountain Lakes section of the Boonton district now includes approximately 90 per cent. of the homes, a percentage that is probably one of the highest in the United States. The usual far-sightedness of the New York Telephone Company was again demonstrated when a two-hundred pair cable was run, in the summer of 1912, from the Boonton central office to serve this locality, and several miles of smaller cable were provided to distribute the lines throughout the park.

Mountain Lakes has mile after mile of amecite driveways, and its chain of picturesque lakes affords unlimited possibilities in the summer for boating, fishing and bathing, and in winter for skating and ice-boating.



OPERATORS' SITTING ROOM, BOONTON, N. J.

Left to right—Miss Nell Frace, Supervising Chief Operator; Miss Cora Kelly, Evening Operator; Miss Mary Downey, Sunday Relief Operator; Miss Elsie M. Carman, Chief Operator; Miss Jennie Taylor, Evening Operator; Miss Janet Van Ness, Day Operator; Miss Myra Dayton, Night Operator

Telephone Progress

Boonton's new central office is the fifth to be used since the service was first established here, in the early '90s. The first central office consisted solely of a switching device for the few telephones in use, and was placed in a general store at Liberty and Main streets. The proprietor of the store, S. S. Lyon, was the only operator and the traffic was so light that his duties required little time.

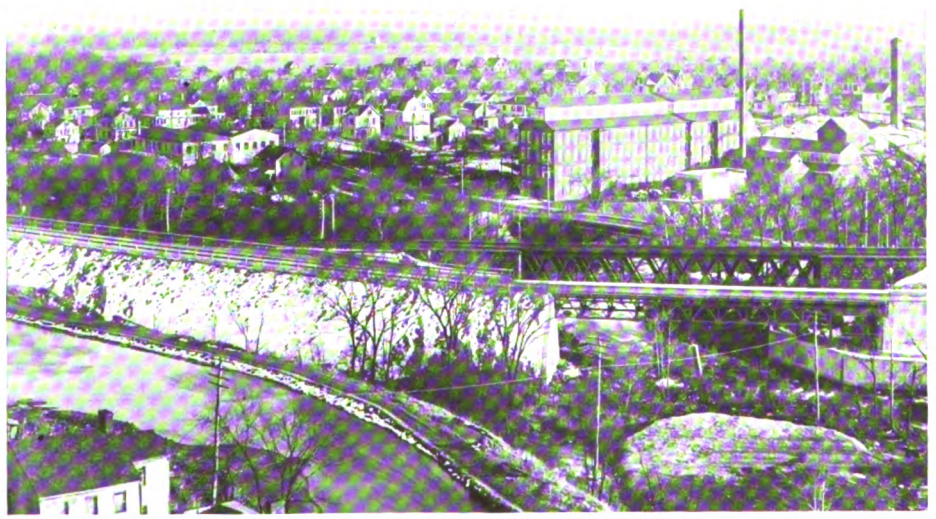
The second home of Boonton's exchange was the Holmes Library at the corner of Main and Church streets. One operator, Miss Mame Worman, took care of all the telephone calls made at that time. Later the increasing use of the telephone necessitated the installation of a twenty-drop switchboard, which was placed in C. B. Lawton's shoe store, in the Salmon Building. Miss Elvie Doremus, now Mrs. Clyde Tillotson, handled the calls sent by the ten subscribers the tiny exchange could boast of serving. The central office was next moved to 408 Main street, where it remained until March 13, 1915.

The growth up to 1910 was comparatively slow. On January 1, 1910, the central office served 286 telephones; on the same date a year later, 319 telephones, and on January 1, 1912, there were 394 telephones in the Boonton district. On January 1, 1913, there were 464 telephones; on January 1, 1914, 583, and at the beginning of the present year, 642 telephones. There are now about 700 telephones served by the local central office.

The new switchboard, which was cut over on March 13, 1915, was built and installed by the Western Electric Company, and is of the most modern type. It is housed in the new central office, which occupies the entire third floor of the remodeled Boonton National Bank Building. The switchboard has four operating positions and is equipped with 720 subscriber lines and 40 trunk lines. It replaces a magneto switchboard which had a capacity of 360 subscriber lines and 40 trunk lines. It is operated by the present force of seven operators, in charge of the Chief Operator, Miss E. M. Carman.

The cut-over from magneto to common battery required just three seconds, seven hundred lines being disconnected and reconnected in that time.

The district served by the exchange is seventy-five miles in area, and covers Boonton, Mountain Lakes, Montville, Lower Montville, Towaco, Powerville, Rockaway Valley, Parsippany, Troy Hills, and Fox Hill. The building in



View from Operators' Sitting Room, Boonton, N. J.

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which the switchboard is located is thoroughly fireproof, and looks as though it were designed and built expressly for our central office. The telephone quarters are divided into two rooms, the main room overlooking Main street and containing the new switchboard, the distributing frames, the chief operator's desk, and other necessary apparatus. The second room, for the use of the operators, is well furnished and attractively decorated—one of the cosiest and pleasantest in the State. All the furniture is of fumed oak with leather upholstery. From the windows of this room is seen a wonderful view of the country for miles around; the large reservoir in the valley below can be seen in its entirety, and the towns of Morris Plains, Morristown, Madison, Short Hills, Summit, Chatham, Caldwell and Parsippany, near where Mr. Theodore N. Vail spent a great part of his boyhood days at the home of the prominent Quimby family. It will be remembered that Mr. Vail's mother was a daughter of Judge Isaac Quimby, and a sister of General Quimby, distinguished as a mathematician, and a general of the Civil War.

Preceding the cut-over, luncheon was served for the telephone officials and their guests at the Mountain Lakes Inn. During the luncheon Mr. Garrison, editor of the *Boonton Bulletin*, which has served the town for nearly half a century, read an original article comparing the telephone and the newspaper, and showing the necessity of both to the American nation. Judge Salmon, chairman of the Telephone Committee of the Board of Trade, paid a high tribute to the Telephone Company in thanking it for the coöperation displayed in helping "boom" Boonton by improving the telephone system. He said that among the many splendid characteristics of the telephone organization were its willingness to cooperate with the public it serves, its high efficiency in its work, and the outstanding fact that it has a common battery organization, like the system it has placed in Boonton. It is a system of many separate batteries working together to provide good service.

Reporters Reported

By Dorothy Thorne

AMONG the demonstrations of the transcontinental telephone line which have been held at the offices at 15 Dey street, perhaps the merriest occurred on the afternoon of Friday, March 26, when a group of young women, representing a number of the leading dailies of New York and Brooklyn, were invited to test for themselves the wonder-line. The prospect of an instantaneous trip to San Francisco and back was so full of mystery and alluring novelty that suffrage, fashions, household helps, and even feature stories, were all successfully disposed of before the appointed hour, and the early afternoon was free for the momentous experience of chatting across 3,400 miles, and hearing merry nothings reach the Pacific three hours before they left the Atlantic.

Previous to the demonstration a very delightful luncheon was given at the Machinery Club, Mr. R. S. Scarburgh and Mr. James Robb being the hosts. The ladies of the press were thus afforded an opportunity to become acquainted informally, and the "jest and youthful jollity" which made the occasion its own revealed the newspaper girls in their unofficial capacity as an alert, interesting and interested, and withal a very natural and human set of girls. The intensity of the last characteristic is one great factor in their success in selecting and reporting the news of feminine interest for the thousands of women readers of the daily papers. Many of our own girls, throughout the Company, have probably felt this as they have read the work of these alert, spontaneous newspaper girls; and if we could all see them in person, without the "Woman's Page" between us, we should find them a fun-loving, girlish set of young women, capable, bright, and purposeful, like other girls who have a worth-while work to do, and so with much in common between ourselves and them.

Luncheon over, the party crossed to the Telephone Building and soon the eager reporters were gathered about the long table, listening in on a transcontinental conversation, and talking at the rate of 56,000 miles a second. Mrs. Arthur A. McLean, hostess in the Empire State Building of the Panama-Pacific Exposition, was at the San Francisco end of the wire, and several of the New York newspaper women were personally acquainted with her, so there was much friendly jesting, and many hasty interruptions to inquire for this or that mutual friend, or to send a message to so-and-so. Unexpectedly, Evelyn McCormick, a California artist and a friend of one of the ladies at the New York end of the line, was found to be of the party in San Francisco, and so great was the excitement and delight at this unforeseen meeting, with a continent between, that all the listeners felt as if they had suddenly come upon old friends.

Each one of the reporters spoke over the line, and occasionally one of the listeners would quietly produce a very small, neat, and unostentatious notebook, into which she would jot some little item for future use. As Mr. Scarburgh or Mr. Robb would explain some technicality of the latest triumph of telephony, these little note-books and bits of paper seemingly plucked out of the air, would become a trifle more evident, though always they were delightfully casual, and decidedly subordinate to the breathless exclamations of wonder and interest.

Mindful of the morrow's pages, the reporters asked for a message to the women of New York, and if cordiality could bring her to the fair, every New York woman would surely be there, so warm was the invitation to the Exposition, and so winning the descriptions of its beauties. That these messages were delivered, those who are in the habit of reading the women's pages in the New York dailies already know, for the sprightly articles which appeared next day did ample justice, so far as words could do it, both to the messages and to the whole experience. With such an inspiring subject, the able pens had fields to test their mettle, and the results were as interesting to the general reader for their context as to telephone people for their lively and vivid treatment and the keen appreciation shown of the great marvel of science which was their inspiration.

Not Eligible for a Discount

THERE are some curious admixtures of occupations for the sake of earning a livelihood, and one is illustrated by an application from an East Side Jewish Rabbi, who wrote the Company: "Please send a representative of your branch to install a private telephone station at my office at — Suffolk street, at the special discount to Reverends." When our representative called to secure the contract, he discovered that the Reverend was a member of a firm of saloonkeepers, and the "office" was in the rear of the bar. When this was discovered, the explanation was made to the applicant that in order to allow him the discount we should have to install the telephone in his private residence. He was not willing, however, to accept this change of location, as he made his headquarters in his "office."

LOUIS HELMS, *Salesman, Orchard District.*

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W. L. Richards and G. K. Thompson

IN speaking of these two men, whose biographies are printed below, Mr. J. J. Carty, Chief Engineer of the American Telephone and Telegraph Company, said: "Will Richards and George Thompson are types of the best there is in the Bell System. Their work from the beginning has been faithful, unremitting, and effective. Whatever has been assigned to them they have done enthusiastically and well. I know that every man in the System will be pleased to see that men who go about their work so unostentatiously are nevertheless known and appreciated."

W. L. Richards

MR. RICHARDS was born in East Somerville, Mass., and attended the Malden public schools and Comers Commercial College at Boston, Mass.

He entered the telephone business, in the employ of Charles Williams, Jr., 109 Court street, in September, 1878. At that time Mr. Thomas A. Watson, the first telephone engineer, was the directing spirit.

Mr. Richards assisted Mr. Francis Blake, the inventor of the Blake transmitter, in the installation of some of the first types of Blake transmitters that were placed in service on actual lines. At the time Mr. Berliner, the inventor of the Berliner transmitter, was in the employ of the American Bell Telephone Company, Mr. Richards was assigned as his assistant. Later Mr. Richards was appointed chief inspector, serving under Mr. E. T. Gilliland and Mr. H. V. Hayes.

Subsequently Mr. Richards was transferred to the Engineering Department of the American Telephone and Telegraph Company, and assigned to development work on transmitters, receivers, and other problems involving the improvement of the telephone service.

Mr. Richards has made numerous inventions, some of which are still in service in the Bell System. His more important inventions were the operator's head telephone, early types of common battery circuits for local and toll work, fuses for protecting telephone circuits against high potentials, and telephone protective devices now known as the No. 58, No. 59 and No. 60 arresters. Others of his inventions included a compound head telephone, two-way telephone repeater circuits, magnetic circuit for loading coils and special forms of bipolar receivers.

Mr. Richards has been assigned for the ensuing year, by the American Telephone and Telegraph Company, as engineer for its exhibit at the Panama-Pacific Exposition in California. Mr. Richards is a member of the Telephone Pioneers' Association, and in September next will have completed thirty-seven years' continuous service in the telephone business. He is one of the very few pioneers who has been most intimately in touch with all of the varied developments of the telephone business since its inception.

George K. Thompson

MR. THOMPSON was born in Brunswick, Me., in 1864; moved to Malden, Mass., in 1876, and graduated from the Public Grammar School in 1880. Mr. Thompson has always possessed a love for things mechanical and electrical, and before he had reached the age of twelve years he had learned to fire and run an old "Down East" wood-burning locomotive.

After being employed as a stationary engineer for a year he entered in 1882 the employ of the American Bell Telephone Company, now the American Telephone and Telegraph Company. On May 15 of this year he will have been in the employ of the Telephone Company thirty-three years. Mr. Thompson has been associated with the testing, experimental and design side of the telephone business during the entire period of his service. For several years prior to the removal of the Engineering Department from Boston to New York, Mr. Thompson was at the head of the circuit-testing and substation apparatus development department.

His inventions have been quite diversified in character, covering improvements on switchboard and telephone circuits, telephone call registering systems, fire alarm devices, telephone repeaters, transmitters, pneumatic delivery and selective ringing systems. Mr. Thompson has made a special study of the telephone transmitter. At the time of the inception of the common battery system in 1894, he developed what is now known as the high resistance White solid back transmitter button. In 1900 he invented a four-party selective system for common battery use. In 1901 he was granted a patent on an extremely simple and efficient pneumatic ticket distributing system for use in large telephone exchanges. The three latter inventions are still in extensive use throughout the Bell System.

Since 1907 Mr. Thompson has been at the head of the substation equipment division of the Engineering Department at the Company's offices at 15 Dey street. For the last few months he has been engaged in arranging the electrical, mechanical, and moving picture equipment for the American Telephone and Telegraph Company's exhibit building at the Panama-Pacific Exposition. This building is said to be one of the finest of its kind in the Palace of Liberal Arts and is being thronged daily by visitors who are given an opportunity to hear music and talking over the new transcontinental telephone line. Months ago, before the opening of this line, Mr. Thompson conceived the idea of sending the sound of the Liberty Bell at Philadelphia across the continent as a feature of historical and sentimental interest, signalizing the linking of the West with the East. The sending of the sound of the bell was most effectively accomplished by the Bell Telephone Company of Pennsylvania at the opening of the transcontinental line, a short time ago, for commercial service between Philadelphia and San Francisco.

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The TREND of REGULATION

A Frank Warning

By J. L. Swayze, General Attorney

THE position taken by the New York Telephone Company and The Delaware & Atlantic Telegraph & Telephone Company, through their General Attorney, J. L. Swayze, at a hearing held at Trenton, N. J., before the House Judiciary Committee of the New Jersey Legislature, marks a new era in the trend of regulation.

The telephone companies were the first of the public utilities to realize that regulation by properly constituted State authorities was desirable. Among their reasons for arriving at this conclusion was a realization of the necessity for some means of dispelling the unmerited suspicion of all successful corporations, which prevailed in the popular mind. This suspicion made it an easy and popular sport to bait corporations at every session of the Legislature, with the consequent harassing of the minds of those charged with the conduct of the business, and, in the event of subsequent investigations, with results that at best could be only temporary and usually were unfair in many particulars to both the utilities and their customers. This system of regulation by spasmodic legislative investigation was expensive, unsatisfactory, impracticable, and destructive of that absolute essential of a public utility—the confidence of the investing public.

The following is an extract from the language in which Mr. Swayze sounded a warning to the New Jersey Legislature against a return to the destructive programs of regulation by legislative committees:

"In all candor, hasn't the time come when there should be some relief from legislative attacks on business and the companies allowed to devote their energy to conducting their affairs in an orderly way? This cannot result from creating a legislative committee to carry on an investigation on the same lines as the Public Utility Commissioners are authorized by law to do. If committees of this kind are to be appointed by the Legislature, it is time to abolish the Board of Public Utility Commissioners and undertake the job of regulating public utility companies directly by the Legislature. Utility companies cannot continue under conditions of regulation by commissions if they are also subject to such attacks as are proposed in this resolution by the Legislature.

"If in your judgment the Legislature should take out of the hands of the Board of Public Utility Commissioners the duty of regulating the telephone companies, then go about it in an orderly way; introduce a joint resolution providing for a thorough and complete investigation, and appropriate a sum of money which will allow the committee appointed to do its work and carry on the investigation in a thorough, orderly and efficient manner and relieve the companies of being regulated by the Board of Public Utility Commissioners. If the policy of the State is to be regulation by the Legislature and not by the Board, then come out frankly and say so, and provide the machinery to make effective what you say is to be the policy of the State. But in all decency and fairness you should refrain from asking the public utility companies to continue under the jurisdiction of the Board of Public Utility Commissioners, and at the same time appoint a legislative committee to carry on the same kind of investigation; such duplication involves waste of money and energy and is destructive of the business that you are regulating."

Other Trend of Regulation Notes

All Extensions of Facilities Need Not Be Profitable

THE California Railroad Commission, in granting its approval of a certain agreement between the Pacific Gas and Electric Company and J. Thompson, on January 13, 1915, pointed out in the following language that it does not consider it necessary or possible that each service extension shall be uniformly profitable or that there shall be no unprofitable extension:

Inasmuch as rates for electric service are made for average conditions, it must be perfectly obvious that if the rates for a given class of service are as a whole remunerative, these rates must provide for both that business which is more profitable and that which is less profitable than the average. The extremes in either direction undoubtedly include business which is so profitable as almost to warrant a classification at lower rates and business which is temporarily at least an actual burden upon other subscribers in the same class. In view of these facts it will be evident that if all unprofitable business be eliminated, the rates which may have been reasonable theretofore must be reduced to compensate for the reduced cost of service.

A Public Hearing Is a Necessary Prerequisite to a Valid Order

THE Illinois Supreme Court, in the case of the Farmers' Elevator Company of Yorkville *vs.* Chicago, R. I. & P. Rly. Co., 107 N. E. Repr. 841, decided February 17, 1915, held that the Public Utilities Commission of Illinois was without power to order the physical connection of two railroads based upon the findings of an investigation which the Commission had caused to be made.

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The court held that it was necessary to have a public hearing in which the board could hear evidence and give the parties interested an opportunity to introduce testimony and cross-examine witnesses.

Wisconsin Railroad Commission's Policy Shifting in Favor of Regulation Instead of Competition

IN the case of the City of Neenah *vs.* Wisconsin Traction, Light, Heat & Power Co., 1 P. U. R. 195, p. 372, the Wisconsin Railroad Commission held that the Public Utility law of Wisconsin provides three remedies for the use of municipalities in dealing with public utility corporations, *viz.:* (1) The election to purchase; (2) application for a certificate of necessity and convenience to permit competition, and (3) application for an order prescribing reasonable rates.

In its decision the Commission held among other things that a franchise to do business is a property right; that the reasonableness of any rate for any kind of service must be decided according to the principles laid down by the Commission, the most vital of which are that the utility shall receive a reasonable return upon its property and that the consumer shall receive service at a reasonable rate; and that the policy of the State of Wisconsin with reference to public utilities has shifted so as to place more emphasis on the adjustment of rates than on the introduction of competition.

Physicians Not Entitled to Residence Rates in Office Outside of Residence

THE Board of Public Utility Commissioners of New Jersey, in a memorandum handed down on March 11, 1915, in the case of Dr. Hugo Alexander *vs.* New York Telephone Company, held that the telephone of the complainant who maintains an office outside of his residence is properly classified as a business telephone and that he was properly charged business rates therefor.

Power to Regulate Not Equivalent to Ownership

THE Supreme Court of the United States on March 8, 1915, handed down two decisions, setting forth views of great interest to all utility companies, in the first of which—Northern Pacific Railway Company *vs.* State of North Dakota—the Court used the following significant language:

> The railroad property is private property devoted to a public use. As a corporation, the owner is subject to the obligations of its charter. As the holder of special franchises, it is subject to the conditions upon which they were granted. Aside from specific requirements of this sort, the common carrier must discharge the obligations which inhere in the nature of its business. It must supply facilities that are reasonably adequate; it must carry upon reasonable terms; and it must serve without unjust discrimination. These duties are properly called public duties, and the State within the limits of its jurisdiction may enforce them. The State may prescribe rules to insure fair remuneration and to prevent extortion, to secure substantial equality of treatment in like cases, and to promote safety, good order and convenience.
>
> But, broad as is the power of regulation, the State does not enjoy the freedom of an owner. The fact that the property is devoted to a public use on certain terms does not justify the requirement that it shall be devoted to other public purposes, or to the same use on other terms, or the imposition of restrictions that are not reasonably concerned with the proper conduct of the business according to the undertaking which the carrier has expressly or impliedly assumed. If it has held itself out as a carrier of passengers only, it cannot be compelled to carry freight. As a carrier for hire, it cannot be required to carry persons or goods gratuitously. The case would not be altered by the assertion that the public interest demanded such carriage. The public interest cannot be invoked as a justification for demands which pass the limits of reasonable protection and seek to impose upon the carrier and its property burdens that are not incident to its engagement. In such a case, it would be no answer to say that the carrier obtains from its entire intrastate business a return as to the sufficiency of which in the aggregate it is not entitled to complain. * * *
>
> We have, then, to apply these familiar principles to a case where the State has attempted to fix a rate for the transportation of a commodity under which, taking the results of the business to which the rate is applied, the carrier is compelled to transport the commodity for less than cost or without substantial compensation in addition to cost. We say this, for we entertain no doubt that, in determining the cost of the transportation of a particular commodity, all the outlays which pertain to it must be considered. We find no basis for distinguishing in this respect between so-called "out-of-pocket costs," or "actual" expenses, and other outlays which are none the less actually made because they are applicable to all traffic, instead of being exclusively incurred in the traffic in question. Illustrations are found in outlays for maintenance of way and structures, general expenses and taxes. It is not a sufficient reason for excluding such, or other, expenses to say that they would still have been incurred had the particular commodity not been transported. That commodity has been transported; the common carrier is under a duty to carry, and the expenses of its business at a particular time are attributable to what it does carry. The State cannot estimate the cost of carrying coal by throwing the expense incident to the maintenance of the road-bed, and the general expenses, upon the carriage of wheat; or the cost of carrying wheat by throwing the burden of the upkeep of the property upon coal and other commodities. This, of course, does not mean that all commodities are to be treated as carried at the same rate of expense. The outlays that exclusively pertain to a given class of traffic must be assigned to that class, and the other expenses must be fairly apportioned. It may be difficult to make such an apportionment, but when conclusions are based on cost the entire cost must be taken into account.

This case, therefore, recognizes that the State has a broad field for the exercise of its discretion in prescribing reasonable rates for common carriers within its jurisdiction; that it is not necessary that there should be uniform rates or the same percentage of profit on every sort of business, and that there is abundant room for reasonable classification and the adaptation of rates to various groups of services.

It is further recognized that despite this range of permissible action the State has no arbitrary power over rates; that the devotion of the property of the carrier to public use is qualified by the condition of the carrier's undertaking that its services are to be performed for reasonable reward, and that the State may not select a commodity, or class of traffic, and instead of fixing what may be deemed to be reasonable compensation for its carriage, compel the carrier to transport it either at less than cost or for a compensation that is merely nominal.

In the case of Norfolk and Western Railway Company *vs.* West Virginia, decided on March 8, 1915, the court held that what was said in the Northern Pacific Railway Company *vs.* North Dakota case, decided on the same day, applied in this case, and held that the State of West Virginia exceeded its authority in imposing a 2-cent fare per mile for passenger traffic upon the Norfolk and Western Railway Company, in that by the consequent reduction of rates the railroad company was forced to carry passengers, if not at or below cost, with merely a nominal reward, considering the value of the traffic affected.

Telephones Put Out of Order by Fire O. K.'d in Record Time

ON Tuesday, March 30, at one o'clock, a fire broke out in the barn belonging to the Fairchild Company, on DeHart street, Morristown, N. J. The Telephone Company immediately dispatched Connors's gang to the scene, but it was two o'clock before access could be had to the wires that were broken down. By three o'clock every one of the eleven wires and seventeen stations that were put out of order by the fire had been O.K.'d. This meant that eleven loops had to be strung into position and seventeen stations inspected. A remarkable thing in connection with the stringing of the several party line loops temporarily is the fact that not a single reversal was experienced, *i.e.*, in connecting the loops each side of the line was connected correctly—negative to negative and positive to positive.

The credit for this remarkable work is due Lewis Williams, Wire Chief; J. T. Traphagen, Assistant Wire Chief, and Harry Couch and Thomas Sharkey, troublemen, and Edward Connors and his force.

G. C. SMITH,
Chief Clerk, Morristown Commercial.

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Here and There

Equipment Forces in Rochester Celebrate

THE Third Annual Celebration of Washington's Birthday was held by the Equipment Department of the Rochester District at the new Main Building, 95 North Fitzhugh street. The Wire Chiefs and Combination men from the various exchanges assembled in the afternoon for a theater party. A trip through the new Main building followed, and a dinner with toasts, music, and speaking completed the program.

The walls and ceiling of the Plant office were decorated with bunting and flags, and the tables, arranged to form the letters N. Y. T., were also covered with the red, white and blue. The music was furnished during the dinner by an orchestra of members of the Equipment force. Master Welvaert gave violin selections, and Messrs. Simes and Fisher gave several duets on the guitar and mandolin.

Mr. R. M. Bruce, District Equipment Supervisor, was the toastmaster. Mr. P. O. Jacobs, Division Plant Superintendent, spoke of the good work done during the past year and outlined in a general way the policy to be followed during the year 1915. Mr. J. W. Banks, Division Equipment Superintendent, told what work had been accomplished since 1912, and Mr. M. S. Baxter gave a description of the first exchange in Rochester, which was completed in 1879. (Mr. Baxter's paper is printed on page 131 of this issue.) Attention was called by Mr. Bruce to the contrast between the old exchange and the new one which had just been visited. Mr. Spaulding made remarks on local conditions in Warsaw; Mr. Leahy, of Mt. Morris, told of peculiar trouble found on rural lines; Mr. Estes gave an account of the effect of the December storm at the Lighthouse on Lake Ontario, Charlotte, and Mr. McMahon, of Livonia, gave the funny side of the Troubleman's work.

An attractive souvenir with menu, songs, cartoons, and parodies was furnished. The committees in charge were composed of the following:

R. M. Bruce, M. S. Baxter, A. A. Nobles, A. P. Culbertson, D. L. Morris, E. J. Boorman.

Always Ready

ON the morning of February 19, about 5 A.M., two large lunch wagons, placed end to end, and located close to the south side of the Greenwich central office building, caught fire from gasoline.

Mrs. Lillian Brunner, night operator in charge, heard a noise which sounded like a muffled explosion and someone shouting. Going to the window on the south side of the operating room, she discovered that the lunch wagons were on fire, and immediately telephoned in the alarm. The night watchman ran the Telephone Company's emergency line of hose through the dining-room and out of the window, and was playing a stream of water on the wagons when the fire department arrived. Box No. 32, which is located opposite the central office, was rung. This alarm calls the apparatus from all companies, so, hearing No. 32 ring, several of the operators dressed and hurried to the central office to give assistance to the night operators, who they felt would be unable to handle the rush that usually accompanies a general alarm.

Thanks to the prompt action of the night operator and the night watchman, no serious damage was done, but it is noteworthy that the customary Bell spirit of coöperation evinces its presence whenever the situation even appears to demand it.

Telaudit Club

THE monthly meeting of the Telaudit Club was held March 22.

At this meeting a paper was read by Mr. W. M. Tomlins, Jr., Manager Metropolitan Department of the American Surety Company, on the subject, "Surety Bonds from a Corporate Viewpoint."

Mr. Tomlins's remarks were interesting and instructive and he was the target for many rapid fire questions.

At the Call of Spring

ONE of our subscribers at Scarsdale recently moved into a new residence, in which she had been wise to install an intercommunicating residence telephone system. Subsequently, a note of thanks was sent to our Commercial office, and was much appreciated, because of its generous acknowledgment of the "helpfulness" of the telephone during an ordeal which many householders are facing this springtime.

F. H. BULL, JR.,
Agent-in-Charge,
White Plains.

How to Treat Lost Business

IN the Montclair District there were eleven contracts for advertising in the New Jersey Division Directory which expired with the October, 1914, issue. Ten of these were renewed for space equivalent to 90.9 per cent., and in addition to these fifteen new contracts were secured which more than doubled the space covered by expiring contracts. Sixty per cent. of the total business was on an annual basis.

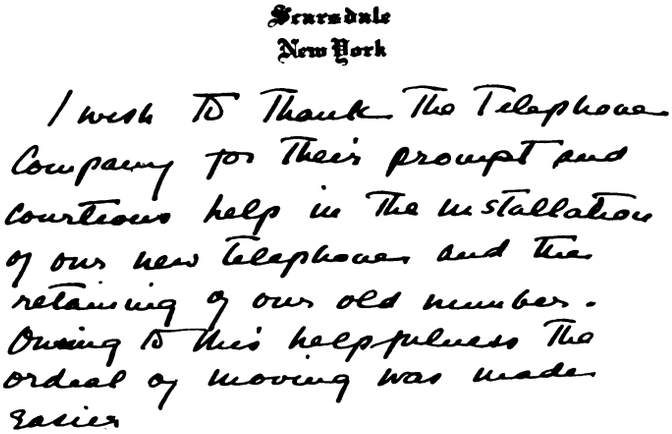
This good work was done by Salesmen H. W. Smith, W. A. Dockery, and W. C. MacBrair.

"Preparedness"

ONE morning in February, about half-past seven, when everything outside was covered with snow and sleet, and I was down in the cellar "tending furnace," my wife called me and said that a lady wanted to talk to me. As soon as possible I went to the telephone, but found that it was a visitor instead. She said that she wanted to see me before I left for the office as it would save her a trip downtown, and if I had a contract blank in the house, she would like to sign it then and there, and hoped that I could have the telephone installed immediately on account of the weather.

On another occasion, a carpenter called at my house, and asked for Mr. Swain. I explained that he had made a mistake, and that I was Mr. Swan, of the New York Telephone Company. This led to a conversation regarding telephone service, and resulted in my securing a contract from him on the spot. I have secured three other contracts, making a total of five, in this way, while at home, outside of business hours.

J. F. SWAN,
Newark (N. J.) Commercial.



The Attached Reproduction of a Communication (Signature Omitted) Received by Our Office Refers to an Intercommunicating Telephone System Recently Installed in a Fine Residence on Platt Avenue, Scarsdale.—F. H BULL, Jr., Agent-in-Charge, White Plains Commercial.

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EMPLOYEES ARE INVITED TO SEND IN ACCOUNTS OF ALL ATHLETIC GAMES AND MEETS IN WHICH THEY PARTICIPATE, TOGETHER WITH PHOTOGRAPHS, IN ORDER THAT OUR REPORTS OF SUCH ACTIVITIES MAY BE MORE COMPLETE

Outing and Field Day

Of the Down-State Divisions

IN the March issue of this magazine, employees were asked to submit ideas for novelty events to be used at the Employees' Outing and Field Games to be held at Schuetzen Park, Hoboken, on June 12, under the auspices of the Telephone Club.

The Track Committee has received some very interesting and novel suggestions, such as potato races, bicycle races, hurdle races, a sprint for messenger boys and office boys, a golf putting contest, and a "spar battle." In this last event two men sit astride facing each other on a horizontal spar elevated about three feet from the ground. Each man is equipped with a pillow. The object of the game is for each man to attempt to dislodge and unseat his opponent by striking him with the pillow.

The number of inquiries and suggestions already received in connection with this undertaking seems to indicate that its success will far excel any of the previous entertainments or athletic games. Further suggestions or ideas for entertaining features at the Meet should be addressed to A. G. Salmon, Secretary, 81 Willoughby street, Brooklyn.

Billiards

HANDICAP tournaments have recently been finished in both carrom and pocket billiards at the Telephone Club. First and second prizes in pocket billiards were awarded respectively to H. E. Pattendon, L. I. Plant, and J. A. Bello, N. J. Plant. First, second, and third prizes in carroms were awarded respectively to C. G. Poole, Auditing Dept., J. Barrett, M. & B. Plant, and H. M. McCulloch, Engineering Dept.

On the basis of the scores in these tournaments, a handicap list has been prepared showing the class of each contestant at each style of game.

A "round-robin" tournament in each class at each game will be run off in the near future to determine each man's standing in his class. Rules will then be posted by which any player can work his way to the head of his class by defeating successively those above him. This scheme will generate an intense rivalry among the players and will thus make for a general improvement in the class of billiards at the Club.

A good deal of favorable comment was aroused by the Exhibition Billiard Match on February 23, in which the National Amateur Champion took part. It is planned to have more such Exhibitions in the future.

Bowling by Long-distance Telephone

AN inter-divisional five-man team match will be bowled on Friday, April 30, by teams in New York, Albany, Buffalo, and Syracuse. Scores will be transmitted between these cities by long distance telephone, and it is hoped that the event may prove as interesting as the match of last year.

Down-State Traffic Bowling Doings

DURING the past five months, six five-man teams from Down-State Traffic have bowled each other three times, making fifteen games in all, with the following results:

Ranking of Teams

	Games Won From						Total Games Won	% of Games Won	High Team Score	Team Average
	N. J.	M.-B.	Traf. Eng.	L. I.	Wch.	Pub. Tel.				
New Jersey		2	2	2	3	3	12	.800	902	810
Man.-Bronx	1		2	2	3	3	11	.733	949	809
Traf. Eng.	1	1		2	3	3	10	.667	902	795
Long Island	1	1	1		2	3	8	.533	918	765
Westchester				1		2	3	.200	759	668
Pub. Tel.					1		1	.067	817	731
Games Lost	3	4	5	7	12	14				

Individual Prizes

Distinguished

High Average—
E. B. Conaty, Traffic Engineer.....173
High Score—
M. A. Thompson, Manhattan-Bronx.....233
Most Consistent—
J. Satterlee, Westchester..... 38 difference between high and low

Extinguished

Low Average—
W. S. Salmon, Long Island.....116
Low Score—
H. G. Greene, Public Telephone..... 65
Least Consistent—
N. A. Waldherr, Public Telephone..... 118 difference between high and low

On Tuesday evening, March 30, the contestants met to celebrate their victories and defeats. The Down-State Traffic officials who did not play, but paid their dollar, were allowed to "sit in." Fifty-odd men were present. After dinner Mr. Mullane, Mr. C. S. Harris, Mr. Cotter, and others, entertained the party with song and story, and about eight o'clock, Mr. J. H. Gordon, Jr., General Superintendent of Traffic, called up from his home at Flushing, L. I., and had a nice fatherly talk with his boys, hand-receivers being supplied all the guests, and a standard desk set connected at the toastmaster's place. A little later Mr. J. C. Lynch, General Superintendent of Traffic of the Bell Telephone Company of Pennsylvania, called up from Philadelphia, and had a pleasant chat with his former associates and subordinates who were present. The big surprise of the evening came when it was announced that those who had not talked to San Francisco would be allowed to do so. At the conclusion of the talking, the toastmaster invited the speaker at the other end of the line to visit him whenever he came to New York. A small riot nearly ensued a few moments later when one of the diners who had previously left the room opened the door, and returned with the telephone in one hand and a flag reading "San Francisco" in the other, announcing, "I am here," and was introduced by the toastmaster as the man from San Francisco.

Baseball

INSTEAD of an inter-department league like last season's, one team will represent the Telephone Club, the committee has decided. Games will be arranged with the various corporations in and about the city, and the different telephone clubs up-State.

Maroon Oval, near the Dyckman street subway station, has been secured for the games.

Any member of the Telephone Club is eligible to try for the team, and all who have had any experience at baseball are urged to report for practice, which will be held at the Oval on each Saturday in April. It is planned to play the opening game early in May.

As this is the first baseball team to represent the Telephone Club, it should have the active support of all club members. The committee feels confident that the games will be closely contested and that all who attend will become loyal supporters of the team.

Basketball

DURING the last winter season, ten teams have taken part in a basketball tournament at the Telephone Club, each team playing every other team. The contest narrowed down to the Newark Plant and Long Island Construction teams, each of which won seven games and lost one. The final game to decide the championship was played Thursday evening, March 4, and was won by the Newark Plant, 19-8.

On March 17, the Traffic team and the Long Island Construction team played off their tie for second place. This was a very close contest; the score at the end of the first half being 10-8, in favor of the Traffic team, and at the end of the second half the score was tied 13 to 13. Play was then resumed for five minutes, during which the Traffic team succeeded in securing six points, and winning by a score 19-13.

Manhattan-Bronx Commercial Still Leads

AS a result of the tournament bowling at the Club during the month of March, Manhattan and Bronx Commercial still leads with ten victories and no defeats. Engineering is second, with nine victories and one defeat, and Division Plant Superintendent Office third, having lost two games.

Frank Reynolds still has the high individual average of 205 and the high score for one game—241.

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NEW YORK TELEPHONE COMPANY

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Telephone Helps

The announcement of a "telephone sale" stimulates ACTION among buyers who read your advertisements.

"Telephone Sales" are Business Builders

SELECT an article you can sell by telephone. Give it a reasonable sales price. Decide upon a definite day. Advertise a "special telephone sale." Then check the results.

This is the best way we know to demonstrate to you the value of **linking up your telephone with your advertising.**

This plan has proved successful for many progressive concerns. One firm, for example, sold **286 pairs of gloves in one day** over the telephone after advertising a "telephone sale."

Possibly you can adapt the "telephone sale" to **your** business, and by backing up your advertising with careful attention to all telephone orders, you can win a desirable class of buyers to your store.

Why not plan a "telephone sale" in YOUR business?

NEW YORK TELEPHONE COMPANY

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The TELEPHONE REVIEW

MAY 1915

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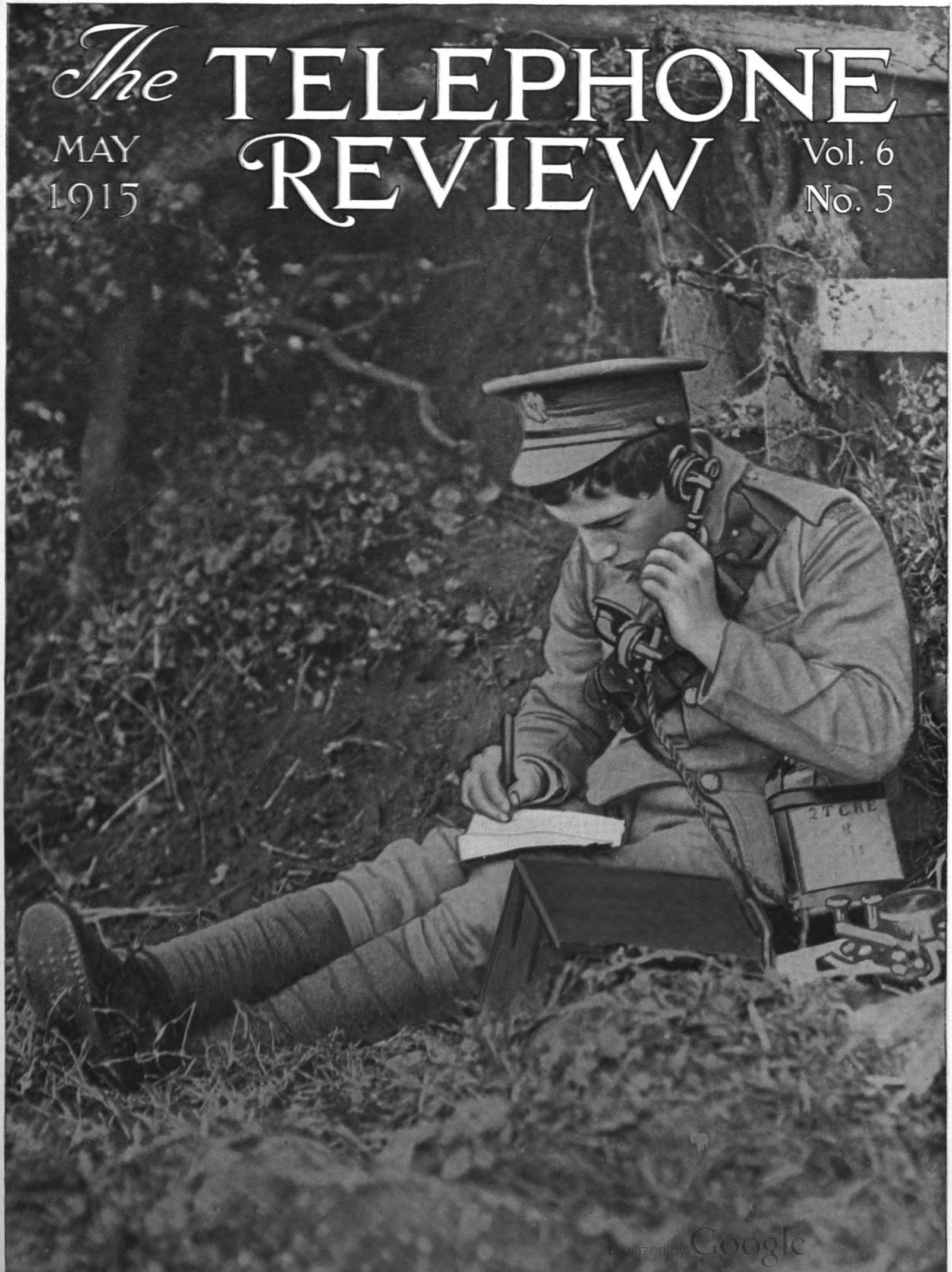
No. 5



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MRS. L. M. DAVENPORT
Manager of the Operators' School, New Jersey Division
Whose personal sympathy and magnetism make her an inspiration, guide, and friend among students and operators

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The TELEPHONE REVIEW

VOLUME·6· NUMBER·5-6

NEW YORK
MAY-JUNE
1915

The TELEPHONE REVIEW
J. D. NEWMAN, Editor.

Published monthly by the New York Telephone Company. U. N. BETHELL, President; WALTER BROWN, Secretary and Treasurer. Publication Office and Principal Place of Business, 15 Dey Street, New York.

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VOL. VI. MAY-JUNE, 1915 No. 5-6

Routine and Individuality

IN our issue last month we quoted from Mr. Vail's Annual Report, in which he said regarding employees of the Bell System, ". . . every individual member is a free, active and responsible agent within his own sphere of action and the limitations of his duties." In connection with this we asked the question if we, each and all, are living up to our opportunities and responsibilities as Mr. Vail sees them.

One of the most striking things about Mr. Vail's Annual Reports always has been the fact that they have not dealt exclusively with the financial and material side of the business in a formal and dry-as-dust manner, but have been interesting descriptions, full of explanations and details, which have given a true insight into the policy and practices of the Bell System, including the relations with employees and other matters affecting them.

What Mr. Vail has said, as quoted by us, therefore deserves more than passing notice.

What is meant by our opportunities and responsibilities?

Everyone realizes in a general way that the Company expects each employee to give a certain amount of attention to the performance of the day's work; a certain measure of diligence, so that time will not be wasted; and a certain degree of intelligence, so that each day's work will be done properly and satisfactorily. This, however, is the minimum of what is expected of us, and does not take into account our opportunities and responsibilities as factors in the organization and system upon which rest the position the Bell System holds with the public.

This higher opportunity and responsibility calls for the exercise of greater ability on the part of each individual than is necessary merely to hold down our job. When we look at our work in this light, the humblest position becomes one of great importance. There is an individuality about each one of us which, if applied to the work upon which we are engaged, will put into our efforts a force that has been dormant, and may be all that is needed to lift us into a wider field of opportunity and responsibility.

In almost every position in the Company, from the highest to the lowest, the duties that it is possible to specify are covered by a routine for the purpose of having the business of the Company conducted in a uniform and orderly manner. These routines have so simplified the work for employees as to make its performance almost automatic, or second nature, to those who master them. Once these routines are mastered the employee is absolutely free to devote all his time and efforts to carrying them out, instead of being handicapped in the performance of his work by having to find out how to do it.

Presupposing, therefore, a knowledge of how to do the work, which every employee should possess, the opportunity exists for the individual ability of each employee to demonstrate itself. No routine can possibly cover all the duties of any position. It is in matters not covered by the routine where individual ability has the chance to show itself, and where the elusive opportunity lurks. The duties of any position are not confined to the things one has to do, but embrace a personal relation with all the other employees who are a part of the organization, as well as with the public.

It is in this personal relation that the highest ability of an employee may possibly find expression, and the effect which the personality of the employees may have upon the business of the Company is beyond all conception.

28,000,000 a Day

WHEN Dom Pedro first saw the telephone at the Centennial in Philadelphia, he was interested in it because of his acquaintance with the inventor, Prof. Alexander Graham Bell. When he tested it, he exclaimed, "My God, it talks!"

The wonderful thing about the development of telephony since that day is not that the lines of the Bell System extend all over the country, reaching 70,000 places, of which 10,000 are without either a postoffice, or a telegraph office, or both, and 45,000 without a railroad station; nor that we have nearly 9,000,000 telephones connected in the Bell System, which is nearly two-thirds of all the telephones in the world. These facts are impressive and tremendously significant, as being the result of private enterprise. The wonderful thing which Dom Pedro realized was that he and Professor Bell could talk together over the telephone, and the wonderful thing about the telephone to-day is that millions of people can talk with each other. It has not meant just adding telephones and lengthening wires, but it has also meant that the engineers of the Bell System have conquered distance. The instrument which Dom Pedro used could talk no further to-day than it could in 1876 except for what these engineers have done—and they have enabled it to talk across the continent!

It is a matter of gratulation among us that last year there were nearly 28,000,000 telephone calls a day over telephones owned in the Bell System. When we realize that this was an average of only about five per telephone, it becomes apparent that there were vast possibilities unutilized.

The war in Europe has revealed uses for the telephone which were undreamed before; when the imperative need for telephones was seen, the deficiency of equipment had to be overcome before the service could be obtained. As we quoted from an English paper in a recent issue, "The war consists of the employment of the three T's, namely, Trenches, 'Tillery, and Telephones." What a commentary is this upon Arnold Bennett's fling at the "fearful univer-

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sality of the telephone" in the United States!

The Seven-league Boots and the Magic Carpet, although they have become classics in literature, were not half so wonderful as the telephone, which is so familiar to all that its possibilities are neglected and we have lost all sense of wonderment over it.

Safety First

A LECTURE on Accident Prevention has been delivered by Mr. J. F. Naylon, District Plant Superintendent, Newark, N. J., to Plant men throughout the entire territory of this Company. Mr. Naylon's lecture is illustrated by nearly 200 lantern slides, and is a most forceful reminder of how accidents can be eliminated almost altogether by the observance of ordinary care on the part of workmen. A large majority of the accidents which occur to employees of the Company are directly the result of carelessness on the part of the persons injured, who, as a matter of fact, have no one to blame but themselves. It isn't a question of blame or responsiblity, however, but of accident *prevention*, in which the Company is interested, and for the benefit of our readers we are reproducing on another page some of the photographs from which Mr. Naylon's lantern slides were made. Others will be reproduced from month to month. These photographs, of course, were not taken when the accidents occurred. Upon looking over the record of accidents, Mr. Naylon selected some of the most common ones, and then had them "staged" over again, and photographed. Other pictures represent conditions that might have caused accidents, or that should be avoided.

A great many of the accidents illustrated in these pictures will bring a smile to others besides employees in the Plant Department, because they come so near home. We sometimes become careless through force of habit, and sometimes because we think there is no danger. A man who would not think of walking under a ladder because he is superstitious, will take his life in his hand by standing on one which should be in the scrap heap. We are reminded of this when we see the pictures of accidents to men who have fallen from step-ladders.

From our earliest youth up, we have been taught not to carry a cane or umbrella under our arm with the end sticking out behind us, and while we are all guilty at times of an infraction of this rule, we are reminded of it when we see the picture of an accident which occurred to a passerby when his coat was caught by tools sticking out of an installer's hip pocket.

It is impossible to stage all the accidents which occur, but the pictures in this series will be very interesting reminders of many things that should be done differently, or not at all, for our own sakes.

Five Years Old!

WITH this issue we begin the publication of THE TELEPHONE REVIEW on the first of the month, and in order to make the change, it is necessary to combine two issues in one. This issue, therefore, is Volume 6, No. 5-6, May-June 1915, although our cover, having been printed in advance, bears the date and number of May.

The decision to make the change was the result of a conference of Editors of Bell publications recently held in New York, and a suggestion from Mr. N. C. Kingsbury vice-president of the A. T. & T. Co., that if all the magazines observed a uniform date of publication, it would be possible for them to be utilized more than heretofore when important announcements are to be made or information disseminated among all telephone people.

A change in the closing date for matter to be printed in the magazine is therefore necessary, and instead of the twenty-fifth of the month, the date is advanced to the tenth.

The purpose of THE TELEPHONE REVIEW is threefold—first, to interest all the employees of the New York Telephone Company; second, to develop an even higher degree of *esprit de corps* among them; and third, to be educational along the lines of the work and business in which we are all engaged.

The employees who have contributed articles in the past have made the magazine what it has become, and have shown what the ability and coöperation within our ranks are capable of doing.

The magazine is five years old with this issue; who will help to make it twice as good within the next five years?

An Explanation

IN the article entitled "Supervisors' Instruction Course" which appeared in THE TELEPHONE REVIEW last month, statements were made by our contributor crediting the Manhattan Division with originating the course of instruction for supervisors.

We have since been informed that the organization of a course of this kind was under discussion for some time prior to the date on which the supervisors' instruction course was introduced in Manhattan; that as early as the summer of 1912 such a course was introduced in the New Jersey Division under the direction of Mr. J. C. Lynch, who was then Division Superintendent of Traffic, and Mrs. L. M. Davenport, the present Manager of Schools; and that this course contained many of the features since followed in Manhattan. So that while to Manhattan belongs the greater part of the credit for the development of the course to its present state of perfection, the credit for the introduction of the first instruction course for supervisors must be given to the New Jersey Division.

Andrew J. Bromley

One of the First Telephone Operators in New York Passes Away

WITH the death of Andrew J. Bromley on March 30, 1915, one of the oldest and most faithful employees of this Company passed from association with many who, like himself, were pioneers in the telephone field. Mr. Bromley died at the age of fifty-one years, after a short illness, at his home in Woodhaven, Long Island.

Mr. Bromley's record is an unusual one; not only were his services uniformly regular, efficient, and faithful during the many years that he served the Company, but he had the distinction of being one of the first telephone operators in New York City. His term of service covered a period of almost thirty-six years. Mr. Bromley entered the employ of the Gold and Stock Telegraph Company, which was the first company to operate telephones under Bell patents in New York, in 1879, as a day operator. After having served in this capacity in the New street, Nassau street, and Murray street central offices, he was appointed on September 19, 1884, Night Manager of the Twenty-first street central office, where he remained until September 26, 1892, when he was made Assistant Manager of the Columbus central office at its opening. On May 13, 1900, he was transferred to the Broad street central office as Night Manager. Since May 5, 1913, he had been in the Long Island Division.

Among Mr. Bromley's early associates as telephone operators in New York were Mr. E. F. Sherwood, Chief Engineer, and Mr. H. J. Schultz, Division Superintendent of Traffic, Manhattan-Bronx, of this Company, and Mr. Edward Corrigan, General Superintendent of Traffic, Chesapeake and Potomac Telephone Company.

The funeral services, held at his late residence, Woodhaven, Long Island, on April 2, were attended by a number of the prominent officials of the Traffic Department, of which Mr. Bromley was an employee. Interment was at Evergreen Cemetery on April 3.

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Making "Movies" by Telephone

How D. W. Griffith Used the Instrument in Producing the Photo Drama "The Birth of a Nation" to Direct the Movements of 12,000 Men Over Twelve Square Miles of Civil War Battle Ground

By A. B. Stearns, Copywriter, Advertising Department

"CAMERA two!"

A man standing on the platform of a sixty-foot tower, from which he could look out over miles of undulating meadow land, polka-dotted with black masses of men and rimmed by low-lying hills, spoke these two words sharply to the operator of a small private branch exchange switchboard on the platform beside him. Two or three miles from the hillside tower one of the director's assistants received the message as the operator repeated it and instantly the roar of cannon reverberated from the hills and a mass of blue-clad soldiers surged forward to attack a long line of trenches behind which gray-garbed men waited.

"Camera three!" said the tower director, and immediately another battalion of fighters charged into the eye of the camera. In rapid succession "Camera four—Camera five—Camera six"—sixteen of them were ordered into action and, as the rapid-fire commands were given, guns roared and recoiled on their carriages; shrapnel whistled and shrieked through the air; the rattle of rifle fire beat a tattoo upon the ears; men fought hand to hand, faced bayonets fearlessly and suddenly pitched headlong or fell backward to the ground and after one convulsive shudder lay still. From 10,000 to 12,000 men were in action and it was all mimic warfare to show the millions who attend the "movies" how the men under General Grant and General Lee fought at Petersburg, Virginia, fifty years ago.

This battle scene is one of the biggest features of D. W. Griffith's historical film drama, "The Birth of a Nation," which is founded upon Thomas Dixon's novel, "The Clansman." One hundred years of American history are covered by Dixon's story, and now under the magic touch of the "movie" man. the making of this century of history can be seen from the comfortable vantage point of a cushioned theater chair. There are many remarkable pictorial effects in this new photo-drama, among them faithful reproductions of Sherman's march to the sea, the burning of Atlanta, Georgia, and the night riding of the Ku Klux Klan, but none is more vigorous or more lavish in detail than the picturization of the battle at Petersburg, which formed one of the closing chapters in the history of the Civil War

Everyone who has seen this film battle has probably wondered how Griffith was able to marshal such large bodies of men and direct their movements over twelve square miles of meadow land in such a way that their charges and counter charges, and their every other action before the camera, combine to present a wonderful picture of war in all its grimness and horror.

The answer is—the telephone. "I could not have accomplished the results I did, without the aid of the telephone," Mr. Griffith told the writer, when discussing his photo-play masterpiece. "I got the idea of using the telephone to direct the battle scenes from the use being made of the field telephone in the European war," he continued. "When the big stage was set, I found that because of the extent of territory over which the battle would range I could not use the usual methods of directing by megaphone and wig-wagging. So I had a telephone system built to cover the field and directed the battle from my 'Central' on the top of the big tower."

Historical records were followed closely in preparing for the battle pictures. For four months professors of history in several universities conducted extensive research to obtain the correct data and West Point engineers mapped out the battlefield in accordance with the official war records. The Ordnance Department of the United States Army furnished the rifles and artillery, the cannon used having seen service in the Civil War.

Under the supervision of army engineers, a large force of men dug the trenches and prepared the breastworks. Roads were built for the artillery; mortar pits were provided for the heavier ordnance; and masked batteries, just as in the battle half a century ago, were placed behind the hills five miles distant from the center of the battlefield. To make the chance of injury to the actors as slight as possible, special shells and projectiles were used which gave the pictorial effect of the missiles used in real war, but were harmless. In spite of this precaution, however, many men were injured, although none fatally.

Mr. Griffith divided his army into sixteen battalions, with a sub-director, who reported direct to him, at the head of

Battle of Petersburg as Re-enacted for the Movies

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Mimic Armies Fight and Sixteen Cameras Snap at the Word by Telephone

each. A camera was detailed to each battalion, which had been carefully rehearsed, and Griffith and his best camera man overlooked all from the point of vantage afforded by the sixty-foot tower.

When it was apparent that wig-wagging and megaphone signaling were inadequate for such a large production, Mr. Griffith had an elaborate system of telephone wires laid out. With the same faithfulness in following the teachings of history that characterized Mr. Griffiths' work with the other details of the drama, he refrained from using telephone poles in constructing his telephone system. The telephone did not come into existence until ten years after the Civil War, and so the telephone wires for the producer's use were laid along the ground. There was a direct wire to each battalion chief. The switchboard was placed on the platform of the tower, where it would not obstruct the view of the producer and his crack camera men, and when the wires extending to all parts of the immense stage were ready, Mr. Griffith simply telephoned his orders for the firing and the movements of the troops.

The scheme worked with clocklike precision. The sub-directors received their orders, marshaled their forces and attacked the camera at the exact moments when they were needed to get the right effect in the development of the plot. In this way Mr. Griffith was able to blend sixteen great pictures into one and create the impression of actual warfare. Making "movies" by telephone is a new development in the picture business and the successful use of the telephone by the man who is credited with setting the pace in the moving picture world makes it probable that other producers will follow Mr. Griffith's example.

The Telephone's Greatest Value

TO whom has telephone service been of the greatest value?

Testimonials have been given by men and women in every walk of life as to the benefits they have received from it in matters of the utmost business, professional, and social importance; lives have been saved, accidents prevented, emergencies of all kinds have been weathered and even turned to advantage.

But to whom has telephone service been of the greatest value? Dr. A. Van der Veer, of Albany, says, "I presume the telephone has been of more value to the profession of medicine than any other." This statement is made in a letter to Mr. F. H. Bethell, in which Dr. Van der Veer gives some of his very interesting experiences with the telephone in its early days in Albany. Dr. Van der Veer's letter is a real contribution to the history of the development of the telephone, and we reproduce it with his permission. It was written to express his interest in Mr. Bethell's address to the Chamber of Commerce in Albany, which we printed in our April issue.

Telephone service to the medical profession possesses an even greater value than to the doctors themselves for through the benefits derived by them the whole world is benefited.

Dr. Van der Veer's letter follows:

CAMP ALKMAAR, BIG MOOSE LAKE,
HERKIMER COUNTY, N. Y.
April 9, 1915.

Mr. F. H. Bethell, Vice-President
New York Telephone Company, New York.

MY DEAR MR. BETHELL:—

I have been very much interested in reading the report of your remarks at the dinner in Albany, which I was very sorry I was unable to attend. What was published in the papers was exceedingly interesting. What I have in mind at present, more particularly, is to call your attention to the fact that I believe the real beginning of the telephone system in Albany is to be credited entirely to the doctors. In 1877 those of us who were teaching in the Albany Medical College and doing hospital work felt the necessity of getting in closer touch with each other, through the day, or the night, before our lectures and clinics. There were six or eight of us who finally introduced the Morse system, and wires were strung from our respective offices and the different hospitals, but by the time we got somewhat acquainted with this method, in 1878 came the introduction of the telephone, and we made use of it immediately, employing it somewhat before the public telephone became a fact. The wires we had strung were used for some little time afterward. I shall always remember my first talk, from my office, then on Hudson avenue, to Dr. Ward's office, on North Pearl street, over the telephone wires, with the unbelief and great astonishment of my wife, who was standing by my side, when she conversed with the doctor.

I do not wish to take up your valuable time, but these little experiences, coming to a man at my time in life, and retiring from practice, are pleasant reminiscences of the early years.

As nearly as I recollect, and my memory being refreshed somewhat by Dr. Ward, those who made up this first effort were: Samuel B. Ward, Jacob S. Mosher, Albert Van der Veer, Edward R. Hun, Wm. H. Hailes Jr., the Albany Hospital, St. Peters Hospital, and additional names were added later, of which you have spoken.

I presume the telephone has been of more value to the profession of medicine than to any other.

With my kindest regards, and congratulations upon the great success you are bringing about, and desiring to indorse the publications you are issuing from time to time, believe me,

Sincerely yours,
(Signed) A. VAN DER VEER,
Albany.

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A Trip Through Our Telephone Building

By Florence Maher, Senior Operator, Orange Exchange

MANY people think the Telephone Building in Orange is a one story building situated in the woods on the Orange Mountains, but with many thanks to the people of the Oranges who know the easiest way to travel (picture of telephone), we who are operators know it is far from such. It is a four story brick building located at 9 Baldwin street, East Orange, miles and miles from the woods.

Orange Central Office

Suppose we take an imaginary trip through this building and see what is inside. First, we visit the basement. On reaching the foot of the stairs we open a door at the left, and find ourselves before a titanic gas engine. This engine supplies the power which is necessary for our service to the public. The noise of the engine deafens us and we are glad to get out of the room. On leaving the engine room, we go into the boiler room where the good-hearted janitor and his assistant strive to warm up the building so the operators can answer the public with a smile. Here we see the boilers, two large ones and a small one. The large boilers are used for heating the building, while the small one supplies the building with hot water all the year round. As this is all we see around us we continue on our journey and make our way upstairs.

We enter a large room and see a smiling cashier seated at her desk while other clerks are busy either writing contracts or answering their telephones. Here we notice that everyone wears a smile, especially the salesmen on their way out to explain the Sign of Civilization to those who have not had the pleasure of having it at their beck and call. At the back of this room of industry is the storage room where telephones and wires are stored waiting to be installed in the homes where the salesmen have visited and explained the many advantages of the telephone.

We continue on our way, up another flight of stairs to the terminal room where we see the main frames, ringing machines and test table. The test table seems a miracle to us as the Wire Chief explains the way lines are tested. Adjoining the terminal room is the installation department, where orders for new telephones are filled. At the rear of the room we notice a door with a sign "Fire Escape" over it. We open it and find ourselves on an enclosed fire escape by which, in case of fire, the occupants of the building would reach the street safely.

We make our way up this escape and on reaching the top of the stairs we hear the merry laughter of the girls, and we know we have reached the operators' quarters. We open the door and see the girls seated at tables, some eating their lunch while the others are helping them eat it. On the other side of the room the matron is standing behind the counter, grinding coffee and preparing good things to eat.

From this room we pass on into the locker room. With mirrors all around us we feel like stopping to admire ourselves, but seeing the sitting-room in front of us we hurry on.

We find the sitting-room so cozy that it makes us think of home. The floor is covered with a pretty green rug. The

Operators' Sitting Room, Orange Central Office

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furniture is mission style, consisting of armchairs, rockers, bookrack, telephone stand, and a large reading-table. On the reading-table there is a lamp. The windows are adorned with scrim curtains prettily draped.

The girls have finished their lunch and have come to the sitting-room for some fun. We linger awhile to see what they do. Someone suggests having a vaudeville show. Everyone takes part, but not in a boisterous manner. One of the bright ones gets up and says, "Who could be sad and lonely while the Blue Bells are all around. Call me up, don't call me down." Before she has time to finish her recitation another bright-eyed lassie starts reciting in a dramatic voice: "Dear Ladies, I am before you but for one cause and that is Woman Suffrage." All the girls shout, "You're in the right place." The speaker is too interested in her speech to hear the remark, and speeds on saying, "The woman of to-day is far greater than the woman of a century ago and should vote. She has to pay taxes and has nothing to say about the assessing of them. Why did our brave men go to war in 1776? Because, my dear sisters, they were taxed the same as we are to-day and like us had nothing to say about it." Someone in the audience whispers a witty comment in a voice loud enough to be heard all over the room. Just as the speaker is about to start again the bell rings and all the girls adjust their sets, ready to go into the operating-room. When the second bell rings they march out of the sitting-room and upstairs. We follow them and see them take the positions assigned to them and start in working, forgetting about the fun they had downstairs. The girls that are relieved at the switchboard march out of the room as quietly as the other girls had marched in.

Orange Wire Chief's Desk

The Chief Operator welcomes us with a glad hand and a smile. She takes us to the "A" Board of fifty positions, forty-six of which are working positions, including the multiple marking position. Across the room is the "B" Board of eight positions. On our way in we passed a desk. The Chief Operator tells us this is the Assistant Chief Operator's observing-desk. About the center of the room is the Chief Operator's desk, not far from which is the clerk's desk. Some one of our party asks about how many working-stations there are and we are informed that there are 10,435.

Although this is an imaginary trip which we have taken through the building, it is what anyone may do.

As the Company is always glad to receive visitors perhaps this little story may suggest what we can tell our friends if they do not take the trouble to come and see for themselves.

New York Telephone Company's Building, 9 Baldwin Street, East Orange

Good Operating Appreciated

MISS KANE, who occupies position No. 28 in the Flushing exchange, was the recipient, recently, of a two dollar and a half gold piece from an appreciative subscriber who felt that the nature of his demands at certain times and the manner in which they were being cared for warranted special acknowledgment of the operator's services. The letter which accompanied the gold piece will be of interest to the traffic forces throughout the territory:

OPERATOR No. 28:

Kindly accept the enclosed as an appreciation for the exceptional good service you have rendered me during year 1914. I am positive it must be very trying on you to make the connections required on my line on Fridays, and I must say that you accomplish it in a way very satisfactory to me.

If business men in general had the good fortune to get girls that paid as strict attention to business as you do I am sure it would be a source of great pleasure.

Very respectfully,
(Signed) Frank J. Byrnes.

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My Experience and Impressions as a Student

By Eleanor V. Foley, Evening Operator, Far Rockaway

WHEN I reached the age of sixteen, I thought it would be a good idea to obtain a position, if possible, as a telephone operator. I was informed by a number of my friends what a splendid position it was if you did what was right and paid attention to your duties. They also told me how quickly you would be advanced if you showed the ability and speed that the Company required of you. With this knowledge before me I repaired to the Company's office at Far Rockaway to apply for a position. I met the Chief Operator who received me very cordially, and in due course of time I was informed by the Company's proper officials that I should go to the school at West Houston street, New York.

As I had never been in New York before, without being accompanied by my parents, it fell to the lot of my father to escort me to the beginning of my career as a telephone operator.

On arriving at the school I was struck with the quietness that pervaded the building. In the office I found a number of young ladies applying for positions. I was received by Miss Schmitt and ushered into the lecture room. On entering the room I was delighted to find myself one of a class of about twenty-seven students. In this room I found a small board which looked very strange to me, but I found out later that it was known as a "dummy" board, one that I would receive instructions on later.

The teacher gave a lecture on the working of the board. In the course of the lecture she announced the necessity of simple dressing, and objected to students' wearing white shoes. I looked at my feet and wished they were at home or encased in black as I was guilty of the infraction.

When the lecture was over I was ushered into the study room. I received a study book and was given my lesson, which consisted of the names of the Manhattan central offices. After the teacher had read the names to us we looked at one another with heavy hearts—it all seemed so difficult. After a short time we were asked some questions regarding the offices and answered them as best we could.

We received our telephone sets and adjusted them in the study room. Passing through the locker room, we espied some large mirrors and, womanlike, we began to admire ourselves, wondering which looked better, the blonde or the brunette. We selected two young ladies for the test, and after some discussion we decided that the brunette carried off the honors, the green cord showing to great advantage against her dark hair. We had a great laugh when we discovered her name was Miss Greene.

From there we moved into the practice operating room and were instructed in the art of receiving and sending calls. I sat anxiously at the board awaiting these calls. My teacher stood behind, correcting and suggesting in regard to my voice and enunciation. That closed the morning session.

I then went to the lunch room and was more than surprised to find a spacious room with accommodations for a large number of people. After lunch I returned to the study room for a given time, and then went to the lecture room where I received more instructions in the use of the board and matters pertaining to the telephone. At the appointed hour I started for home.

The remaining days were much the same as the first, although I became more anxious as the days went by to finish in a month's time.

During one of our sessions I was seated at the board and thinking that no one but girls were at the other end of the wire, when I received a call from a man. I was so surprised I almost fell off the chair and was unable to answer the call for a few seconds. However, I had gone there with the desire to learn anything and everything that was shown on the board or presented to me through the lectures.

When I looked about me and saw the young women who acted as supervisors, and instructors I began to feel that I would like to do that kind of work myself some day. I felt at home there, as it reminded me of the high school I had attended at Far Rockaway.

At the end of my course I was fearful lest I should be sent to some exchange other than one near my home. Great was my delight when I received word to report at Far Rockaway the next day. I arrived at this exchange the following morning and was received by my Chief Operator, who imparted some very good advice, which I will not forget and I can assure you I am very thankful for. I was then introduced to my supervisor, who introduced me to an experienced operator and instructed me to listen in with her in order to become accustomed to the board and the numbers given by the subscribers. After listening in for some days the operator allowed me to answer a call. I felt quite at home doing this, and did not feel nervous or timid, as I thought I should. I was much elated over my first call and could begin to see my efforts rewarded, as I seemed to have a desire to become a great telephone operator. My supervisor instructed me after a time to take charge of a position alone, which I promptly did.

About three weeks after my arrival I received a letter from a girl companion who had received instructions with me at the school. In her letter she told of how well she was doing in her exchange and how she had received her first supervision with the result of thirty calls within a half-hour. I was very glad to hear how well she was doing. However, I could not let her think she was the only one that was advancing, so I wrote back to her and told her I had also received a supervision with the result of ninety calls within an hour.

My experience operating has been very pleasant and agreeable. The supervisors and operators I have come in contact with have been very kind, so much so that it is like going among people I have known for a lifetime. They are obliging and willing to lend a helping hand in my difficulties.

I have now been nine months in the service. I have been appointed an evening operator with an advance in salary, and feel quite capable of handling my position. My ambition is to learn everything that is to be known in the business because I feel that the telephone is only in its infancy and still branching out in all parts of the world.

The subscribers are very nice at times, and especially so are the little children when they call. I love to hear their prattle as they call over the wire "good-by" to me, or ask a few questions. When they call a number and the line is busy I try to get them to hang up the receiver, but they insist on talking to me; it makes me feel that I am back again at school and in touch with my little playmates. When I hear a gruff voice of someone in anger, I soothe him with a "thank you", and then I listen to the piping voice of another who wants to know "What is the matter, Central, can't you get me that number?" And behold, it is a woman, and I wonder why it is that,after all, the most severe critic is one of my own kind, a woman.

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Transcontinental Line Extended to Los Angeles

TRANSCONTINENTAL telephone service has been extended to Los Angeles. This city, with its population of nearly half a million, the center of the world's greatest orange and lemon growing country, with extensive and productive oil-fields close at hand, the Mecca for health, home, and pleasure-seekers, is brought into direct oral communication with the Atlantic seaboard and the great commercial and industrial centers along the way.

From Los Angeles to San Francisco the distance is 475 miles by telephone, making the distance from Los Angeles to New York 3,875 miles.

The public demonstration of the new transcontinental line took place at the Los Angeles building of the Pacific Telephone and Telegraph Company, and in the rooms of the directors of the American Telephone and Telegraph Company at 15 Dey street, New York, on Thursday, May 6, 1915, between the hours of 10 and 12.45, Pacific Coast time, and 1 and 3.45 o'clock, Eastern time. A gathering of distinguished guests participated in the demonstration in both cities.

The demonstration marked not only the completion of the new line, but also its dedication to the service of the public and the opening of the new line for commercial use. The rate for a three-minute talk between New York and Los Angeles is $22.20, and for each additional minute $7.10.

Immediately following the formal opening and dedication of the new line to Los Angeles, there was a demonstration between the Chamber of Commerce, in Liberty street, New York, and the Panama-Pacific Exposition at San Francisco. President Vail and several of the directors of the American Telephone and Telegraph Company were present at the Chamber of Commerce luncheon. At this luncheon the special guests were the Central and South American delegates to the Pan-American Financial Congress at Washington, and they talked to the Commissioners from their respective countries to the Panama-Pacific Exposition in San Francisco. As in the other demonstration, a notable gathering of citizens participated. A vote of thanks was tendered Mr. Vail by the Chamber of Commerce at the conclusion of the luncheon.

Our Operators

An Instance of Their Invaluable Services

THE business section of Montclair, N. J., is confined largely to Bloomfield avenue, and the business buildings are mostly of frame construction. The bank buildings and a few others are of brick, stone, or marble, and some are very handsome. No matter how effective a patrol system, or efficient a fire department there may be in the town, it is impossible to tell what would occur if a fire got well under way in one of these closely built-up blocks. This is true of most other towns.

The question might have been answered with serious consequences in the early morning of April 21 if it had not been for a quick-witted and intelligent operator in the telephone central office. Shortly after three o'clock, Miss Hilda Hollmann, Night Chief Operator at Montclair, answered a signal without getting any response, and coming to the conclusion that burglars were tampering with a telephone wire, or had knocked a receiver off the hook, she quickly located the address of the subscriber, and notified police headquarters of her suspicions. The police discovered a fire in the cellar, and called out the fire department. The ground floor was occupied by two tenants, one side as a cigar store, and the other as a jewelry store, and apartments upstairs were occupied by two families. The fire was confined to the cellar and first floor.

The origin of the fire is unknown, but the signal in the central office was caused by the burning of the insulation on the telephone wires. They might have been wholly consumed, together with the entire structure, and the families upstairs, to say nothing of adjoining buildings (one of which is occupied as a drugstore, containing the usual inflammable material), if the telephone company did not maintain constantly on duty, day and night, a force of operators to serve the public, and also stand guardians of their lives and property.

Miss Hollmann, on her way home on March 1, 1914, when the blizzard came, returned to her exchange when she realized that her services might be needed. The experiences of herself and her sister in reaching their respective offices that day were described in our issue of April, 1914.

A SUPERVISOR in one of the large Brooklyn central offices gained considerable deserved prominence recently in summoning assistance which made possible the saving of three human lives. The Metropolitan papers gave the deed wide publicity and extracts were published all over the country praising the prompt action of this capable employee. The supervisor, who is of a modest disposition, made every effort to avoid the embarrassing attentions heaped upon her and you may well imagine her feelings upon the receipt of a letter from a small Virginia town of which the following is a "true copy," omitting the name of the addressee and signature of the writer:

MY DEAR LADY FRIEND:

After geting your address out of the Paper I am to the gratest of Pleashure in riting you a fiew lines. this lonly hour of the night. you may think strang of me riting you. when any one likes any one they cant help but want there company. Miss Mary I am night Engineer in the Power House bin in it now over 2 years and I bank ever month Seventy five Dollars out of my wages. I am asking you for your Scorrispondance that is if you havent any Gentleman Keeping your company. I am going on forty one and bin married once my wife being northern Lady if I ever marrie again I want a northern Lady I do not like the Southern Ladys. If you dont wish to scorrispond with me maby some Lady friend of yours would a widow Lady would Suite me Just to a Tea. I have a good home on a farm 288 Acors of land 63 acors of it ½ mile out of the city line: Thanking you for an early reply. XXXXXXX.

(Signature.)

[EDITOR'S NOTE: We have no idea what the seven X's stand for at the end of the letter!]

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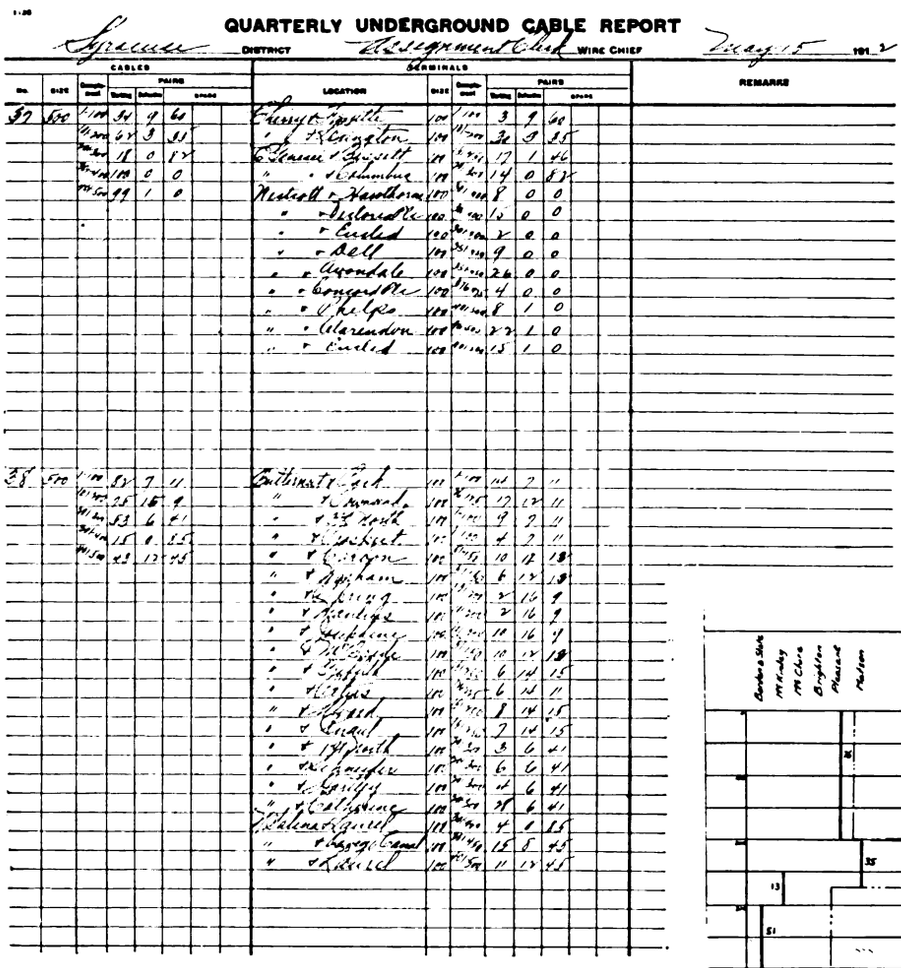
A Method for Securing the Maximum Efficiency of Underground Cables

By E. J. Buchaca, District Engineer, Syracuse


QUARTERLY UNDERGROUND CABLE REPORT

Syracuse DISTRICT Assignment Clerk WIRE CHIEF May 15 1912

Cables No.	Size	Complement	Pairs Working	Pairs Defective	Pairs Spare	Terminals Location	Size	Complement	Pairs Working	Pairs Defective	Pairs Spare	Remarks
37	500	1-100	34	9	60	Cherry & Fayette	100	1-100	3	9	60	
		101-200	62	3	35	" & Livingston	100	101-200	30	3	35	
		201-300	18	0	82	Genesee & Bissett	100	201-300	17	1	46	
		301-400	100	0	0	" & Columbus	100	301-400	14	0	82	
		401-500	99	1	0	Nestroth & Hawthorne	100	401-500	8	0	0	
						" & Desloreal Pl.	100	401-500	15	0	0	
						" & Euclid	100	401-500	2	0	0	
						" & Dell	100	401-500	9	0	0	
						" & Avondale	100	401-500	26	0	0	
						" & Concord Pl.	100	401-500	4	0	0	
						" & Phelps	100	401-500	8	1	0	
						" & Clarendon	100	401-500	22	1	0	
						" & Euclid	100	401-500	15	1	0	
38	500	1-100	32	7	11	Butternut & Cook	100	1-100	14	7	11	
		101-200	25	16	9	" & Crawford	100	201-300	17	12	11	
		201-300	53	6	41	" & 3rd North	100	201-300	9	7	11	
		301-400	15	0	85	" & Crockett	100	1-100	4	7	11	
		401-500	43	12	45	" & Carson	100	401-500	10	12	18	
						" & Appham	100	401-500	6	12	18	
						" & Spring	100	401-500	2	16	9	
						" & Hawley	100	401-500	2	16	9	
						" & Gulphine	100	401-500	10	16	9	
						" & McBride	100	401-500	10	12	18	
						" & Tyler	100	401-500	6	14	15	
						" & Wilkes	100	401-500	6	14	11	
						" & Howard	100	401-500	8	14	15	
						" & Grant	100	401-500	7	14	15	
						" & 1st North	100	401-500	3	6	41	
						" & Schneider	100	401-500	6	6	41	
						" & Gantry	100	401-500	4	6	41	
						" & Catherine	100	401-500	28	6	41	
						Salina & Laurel	100	401-500	4	1	85	
						" & Erie Canal	100	401-500	15	8	45	
						" & Laurel	100	401-500	11	12	45	

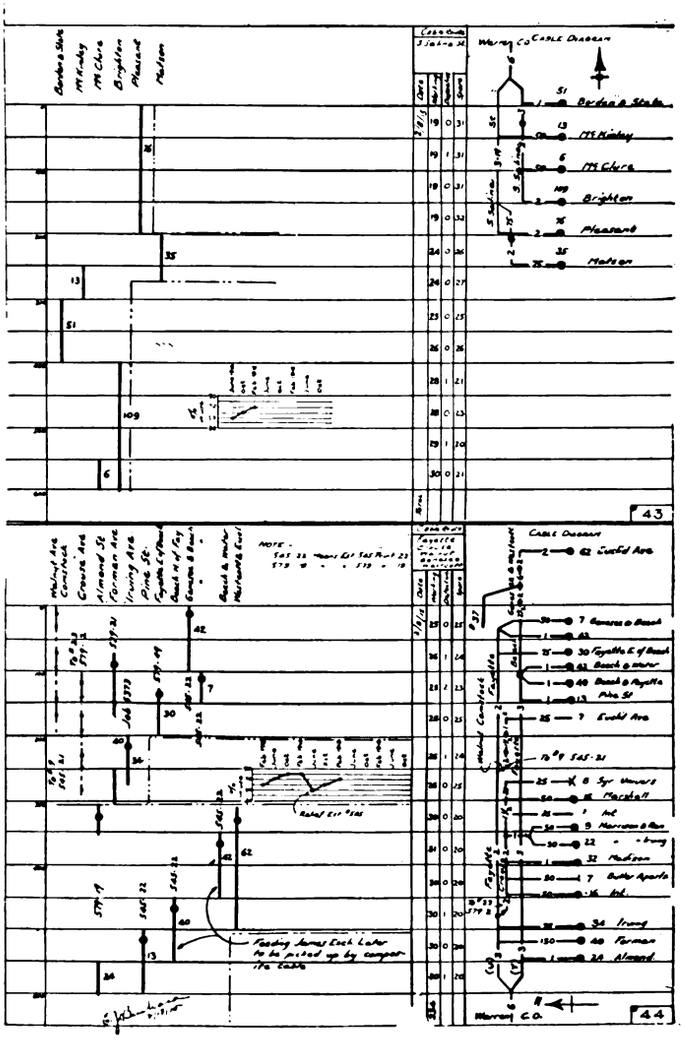
IN all corporations small leaks, light operating load, or low efficiencies of any sort will eventually result in a large total loss.

Telephone companies have large amounts of capital invested in underground and aerial cable plants and to avoid loss endeavor to operate the cables at as high an efficiency as possible. To accomplish this result and not sacrifice the ability to connect new subscribers at any time, it is necessary that some supervisory system be employed so that the total per cent. of working pairs in the cable may be as high as possible, but as the number of spare conductors approaches an allowable minimum consistent with past experience, a warning, automatic if possible, will be given in order that additional plant may be provided.

The system now used by this Company consists in having the Assignment Clerk make up and send to the District Engineer periodical reports in tabular form, in order that the engineer may learn of any cable which will need relief because its load is approaching the maximum. As will be seen from the first illustration, this system is necessarily laborious, expensive, and does not furnish at a glance a complete picture as to the operating condition of the cable.

By a simpler scheme recently devised and tried out in Syracuse, the cable layout and operating conditions are shown graphically and, therefore, more clearly than can be done solely by columns of figures. In place of the tabular reports a diagram made up on tracing cloth has been substituted. One of these diagrams is shown in the second illustration. It shows clearly the route of the cable and all the branches, together with a "bridging diagram" that indicates just which cable pairs appear at each terminal or outlet, and has columns for the "date," "working pairs," "defective pairs," and "spare pairs," and a curve-record of growth.

To fill out this report the Assignment Clerk no longer has to write out the location of each individual terminal and the number of pairs working, defective, and spare for it, but has only to count on his cable cards the pairs working, defective, and spare, in each group of fifty pairs of the cable, and enter the figures in the proper column on a print



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of the diagram. If any particular terminal is congested, or nearly so, a check mark on the "bridging diagram" at the vertical line representing that terminal, will call the engineer's attention to it specifically. If no such check mark appears, the engineer will know that the working lines shown for each fifty pair group are evenly distributed throughout that group.

If so desired, the number of pairs working at each terminal can be shown by writing that number on the "bridging diagram" alongside the vertical line that represents the terminal. In such case the spare pairs can be shown in the column headed "spares" as before. This plan, of course, would require a little more time.

It is estimated that the above scheme will reduce to one-half or one-third the time now necessary for making the report. There is the additional advantage that a print of the diagram pasted in the cover of each cable card will guide the Assignment Clerk so that he can assign pairs in such a way that local congestion in the cable, with the consequent later transfers of lines to other pairs, will be prevented. The print will also act as a bird's-eye view of the route and bridging of the cable, and in this way will be helpful to the Assignment Clerk, Cable Splicer, and Wire Chief when cable branches are being thrown from one main cable to another.

These diagrams can very easily be corrected as cable additions or changes are made, and when the engineer is planning relief they serve as a starting point for his study, since they are always up-to-date. Under the old system, as a rule, the engineer had to draw up a new "bridging diagram" each time he worked on a cable.

Accidents That Should Never Occur

(See Opposite Page)

SEVERAL of the pictures shown in the lecture on Accident Prevention by Mr. J. F. Naylon, District Plant Superintendent, Newark, illustrate accidents which occurred to men using stepladders. This is a very common kind of accident, and yet the ladders cannot be blamed, nor can a chair and box be blamed if a man uses them instead of a ladder, and gets hurt; besides, more time is lost by not using trustworthy ladders and attempting to use substitutes, than would be needed to round up the real article and put it into use.

The first two illustrations show how men will sometimes tempt Providence. In both cases serious accidents resulted before the jobs were finished, just as you would imagine from seeing the pictures. Once a man placed a chair on a table and a box on the chair, to run a twisted pair along a picture molding; the neighbors had to assist in separating the component parts of the conglomerate mass that was soon assembled on the floor.

The third picture shows how a perfectly good ladder may be the innocent means of a spill. Be sure the brace is set so it won't buckle, and never stand the ladder sidewise. The fourth picture shows the correct way.

If the end of a bit must extend outside the tool bag, study how to carry it so as not to injure yourself. In swinging his tool bag from his shoulder to the ground, the man in the next picture cut himself in the leg. He would have avoided this by carrying the bag so the other end would have been foremost. It is especially important in passing along the street or riding in street cars to carry the tools in such a way as not to jab into somebody else.

In the next case no one was injured, (miracles do happen), but what would you have done if it had been your coat that was torn? Instead of carrying tools in his hip-pocket, this installer should have placed them out of the way, as shown in the picture which follows. Such accidents cast a reflection upon the Company as well as upon the employee, for they give the impression that the Company employs careless workmen.

The next picture shows how a workman seriously cut three fingers and the palm of his left hand when removing the insulation on a switchboard cable. The knife slipped. If he had held the cable as shown in the next illustration, nothing would have happened.

No man is excusable for using defective tools. The last illustration shows the head of a star drill that has been mashed. When using such a drill, pieces may chip off and fly into the hand, or rebound from a wall striking the eye. All defective tools should be turned in immediately.

Telephone Service Can Not Be Reckoned in Terms of Money

MANY persons little realize the inconveniences to which they subject themselves by having no telephone service, and no argument is strong enough to convince them; but the awakening comes when some sudden emergency arises, and then they strain every power, and would go to any limit, if only they might have it before it is too late.

On a Tuesday morning recently a telephone call was received about ten o'clock from a prominent physician in Tarrytown for a telephone to be installed in the home of his son-in-law, living in New Paltz. The doctor explained that his daughter was dangerously ill, and telephone service was of the greatest importance. We issued an advance order, explaining the circumstances to the Plant Department, and the instrument was in service at four o'clock that afternoon. On the following Friday, the physician requested the service discontinued, as his daughter had passed away, and the house would be closed. For the telephone service during these three days the doctor expressed himself as being willing to pay whatever charge the Company might make, and added that he wished to express his gratitude and appreciation for the promptness with which the connection had been established and the service given over the line by the operators. In a letter a few days later, he said:

I feel that I ought to express to you, and the employees of your district, my deep and heartfelt gratitude for the efficient and expeditious service which was rendered me during the time it was in active use. If you will kindly forward these thanks to the different employees in the various offices through which my connections had to be made, and to all those concerned in the prompt manner in which service was installed, you will greatly oblige, and place under further obligation, Yours respectfully, (Signature.)

The foregoing information was received from Mr. R. D. Clearwater, Local Manager at Kingston, N. Y. As we have said before, there is no business that touches so closely the lives and hearts of so many people as the business in which we are engaged.

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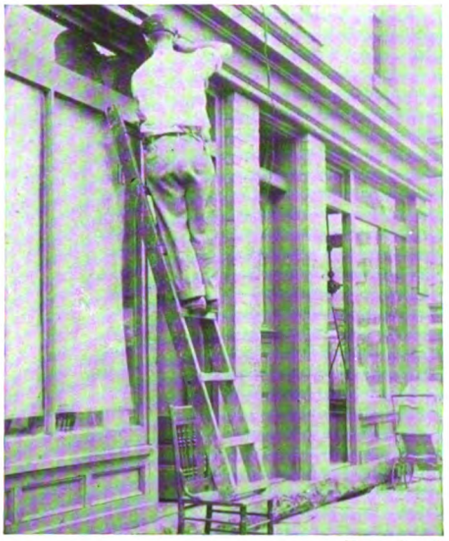
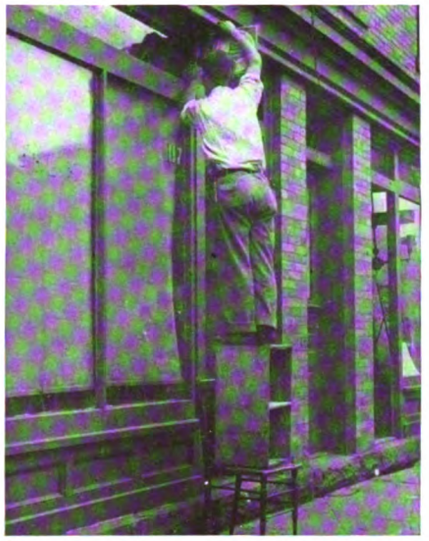
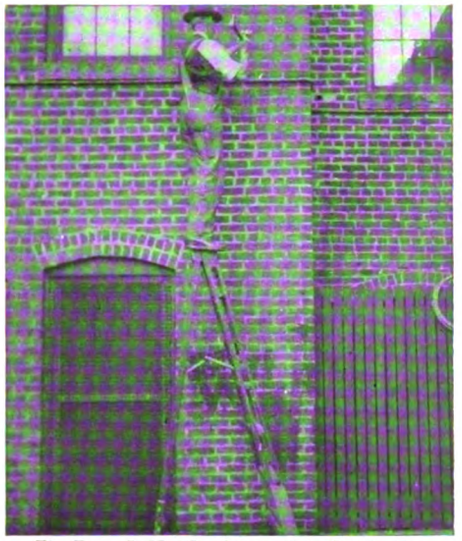
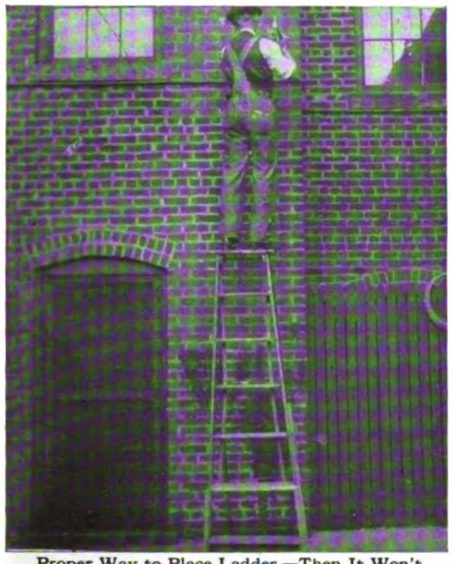


Tempting Providence
Surely Such Things Should Not!



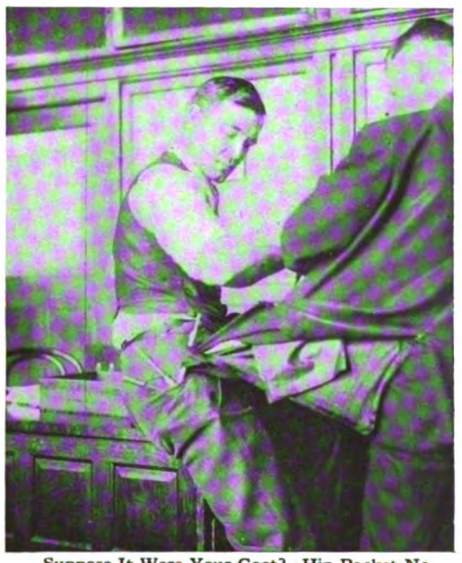


The Brace Is Not Straight and the Ladder Is Turned the Wrong Way



Proper Way to Place Ladder,—Then It Won't Topple Over

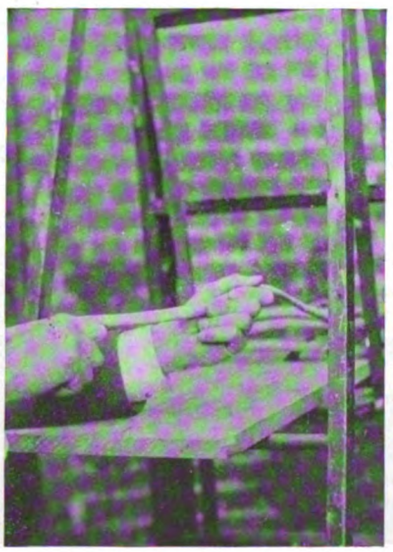
Carrying Tool Bag Wrong Way with Bit Protruding, Workman May Injure Himself



Suppose It Were Your Coat? Hip Pocket No Place for Tools

Proper Way for Workman to Dispose of Tools instead of Carrying Them in Hip Pocket

Removing Insulation on Switchboard Cable this Way, Workman May Cut His Hand and Fingers if Knife Should Slip



Proper Way to Remove Insulation from Switchboard Cable; the Way to Sharpen a Pencil Also

The Head of this Drill has been Mashed, Pieces Might Fly Off and Cause Injury if Used

Accidents Which Should Never Happen and How to Avoid Them

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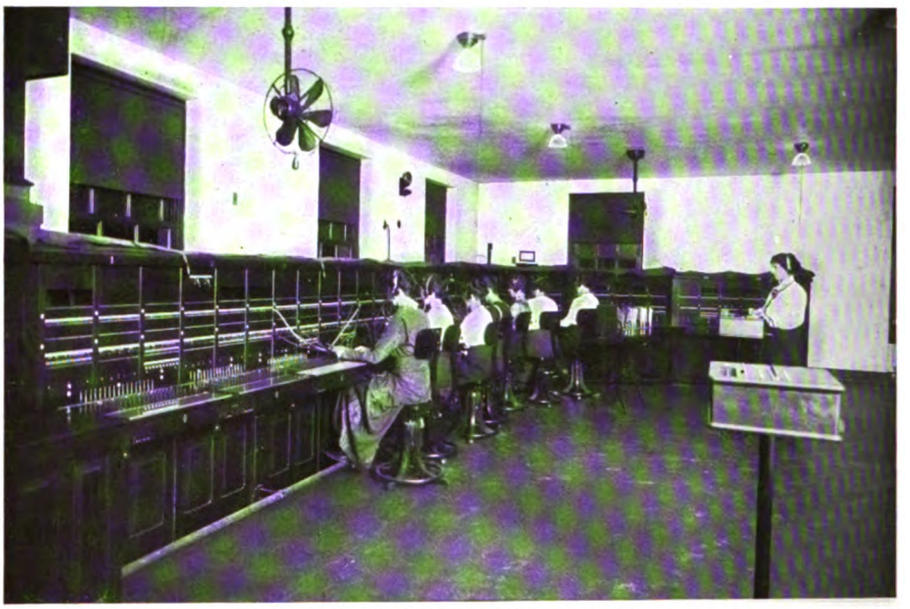
Growth in Jamestown, N. Y.

OUTSIDE telephone facilities in Jamestown, N. Y., have been increased and improved, and on Saturday, April 3, 1915, new local and toll switchboards were cut into service.

To the side and rear of the old Jamestown telephone building a new three story structure was recently added, the rear of the second floor being designed for the toll board and the rear of the third story for the local board. The space formerly occupied by the central office is to be converted into an operator's school, and the quarters of the operators on the second floor have been enlarged by the addition of the space formerly used as the office of the District Commercial Manager.

The equipment of the old Jamestown central office consisted of three toll positions, one combination toll and "B" position, and ten "A" positions on one side of the operating room, and four positions of No. 1 toll board on the opposite side of the room. The new local board is of the Western Electric No. 1 common battery type with ninety-two jacks, and is arranged to give four-party selective service. The capacity of the switchboard in the subscriber section is 8,800 subscriber multiple jacks and in the trunk section 10,500 multiple jacks, the present equipment being 1,700 multiple jacks. There are now in use twelve "A" positions, two "B" positions, and one testing position. The toll board is of the Western Electric No. 1 common battery type equipped with straight ringing with No. 49 jacks; six two-position sections have been installed.



The New Toll Exchange in Jamestown, N. Y.

The New Local Exchange in Jamestown, N. Y.

The information traffic in the new office is to be handled by the "Boston" method on a two-position information desk.

An item of special interest in connection with this cut-over is the cable vault. All of the subscriber and trunk lines for this office are brought in through four 900-pair cables.

Newark Police Study Telephone Courtesy

By E. W. Wollmuth, Local Commercial Manager, Newark

TELEPHONE employees have long practiced the gentle art of courtesy, especially in telephone conversations. Frequently we are told by some appreciative persons that our method of doing business over the telephone is worthy of emulation. It is a well-known fact that the value of courtesy is being recognized more and more by executives of large and small businesses, in some cases by specific instructions issued to employees with a view to encouraging its growth. For instance, the April, 1915, TELEPHONE REVIEW, under the heading "Telephone Manners," published the text of a folder on telephone courtesy for the information of officers and employees of the National Lead Company.

The advent of a new Board of Police Commissioners of the city of Newark on January 1, 1915, brought into existence some new and worthy ideas in police administration. A school of instruction for policemen has been established and is in charge of a former Army captain and two Newark police lieutenants. The classes average thirty in number, and sessions for each class are held daily for a period of three weeks. A curriculum which covers the many phases of a policeman's work includes a talk on "The Proper Use of the Telephone and Cour-

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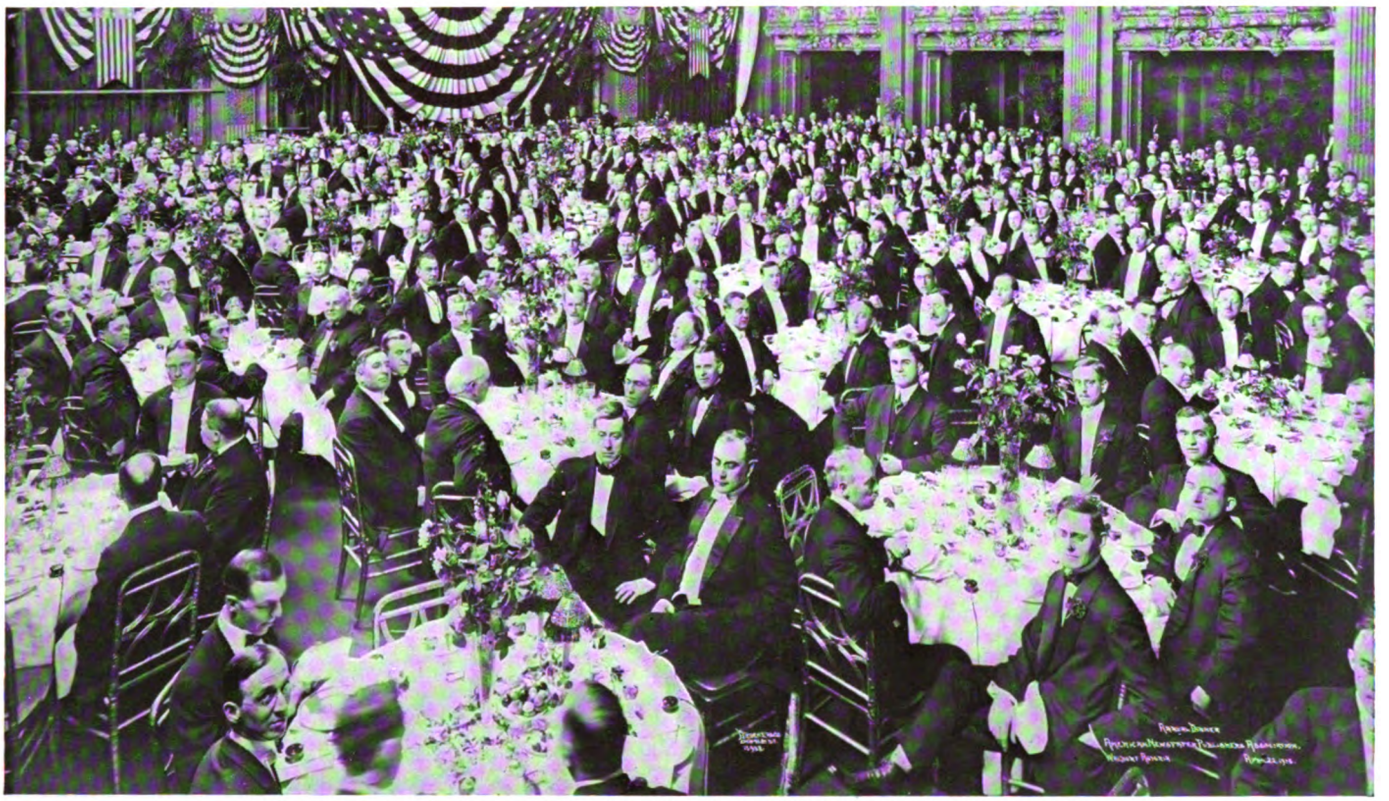
tesy in Police Work." This subject was made the basis of a paper which, at the invitation of the Police Board, has been read before three classes of the school of instruction by the local Commercial Manager, Newark District.

The Police Board is desirous of developing each member of the force into an efficient officer, so that the finished product will be a police department of which Newark will be proud, and upon which strangers in the city will look favorably, perchance taking away with them a lasting impression of Newark's courteous police force.

A suggestion that the Police Department adopt our slogan, "The Voice With the Smile Wins," has been accepted, and at each precinct "desk" is seen the little placard in plain view; but what is more, the slogan is actually working full time. Immediately following the talk to the first class, a circular letter was sent by Chief of Police Michael T. Long to all police captains, instructing them and their subordinates to announce their rank and name and the number of the precinct when answering telephone calls. In outlining the duties of "inspecting captain"—a new office in the department—the Board of Police Commissioners specify as a part of his various duties that it will be necessary for him to "Observe the manner of speech in the use of the telephone."

While the Police Commissioners have in mind the creation of a peerless police force for Newark, it is fair to assume that they will not oppose, but rather encourage, the adoption by police departments of other municipalities, of their plan to foster and maintain a high degree of "courtesy."

The manufacturers of Newark have a slogan, "Newark Knows How"—how aptly this applies to the Board of Police Commissioners!



Annual Dinner, American Newspaper Publishers' Association, Waldorf-Astoria, New York, April 22, 1915

From the Waldorf to the 'Frisco Fair

AT the American Newspaper Publishers' Association banquet at the Waldorf-Astoria in New York, Thursday night, April 22, more than six hundred diners, and about one hundred and fifty women guests in the balcony overlooking the ballroom where the dinner was given, had a demonstration of the telephone which was dramatic and thrilling even to these habitual users of this now almost commonplace utility. This was the outstanding fact in all the newspaper comments on the day following, and an editorial in the New York *Times* struck the crux of the whole matter when it said: "The telephone is an established utility, a commonplace of everyday life, and talking with San Francisco, in the circumstances, differs not at all from talking over the ordinary short distance." Talking to San Francisco is still a novelty, and for that reason attracts the same attention which a few years ago was created when it became possible to talk over a distance of a few miles. So far as concerns the parties engaged in talking with each other over the telephone, there is no difference whether the distance be across a street or across the continent, but to the telephone company there is, of course, a vast deal of difference, and probably in this respect talking with San Francisco brings out more strongly than anything else has ever done the wonderful genius and ability of the Bell System.

Each diner and guest at the banquet was provided with a telephone receiver, connected to the transcontinental telephone line, over which Mayor James Rolph, of San Francisco, and Mr. Charles K. Field, editor of the *Sunset* magazine, addressed the diners. Mr. L. A. Larson, editor of the *Daily Pacific Builder*, San Francisco, sang a baritone solo, and Mr. George Pecheco, a member of the Bohemian Club of San Francisco, played a cornet solo. Word came over the wire that the applause in the dining-hall was distinctly heard in San Francisco. At the conclusion of Mayor Rolph's speech, he and Mayor Mitchel of New York talked with each other for a few minutes.

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Bell Service in the Heart of Beverwyck

By G. H. Staysa, R. R. Agent, Albany

ON the site of Beverwyck, the little colony on the Hudson which late in 1664 came to be known as Albany, a great office building has recently been erected by the Delaware and Hudson Company. In the settlement of Beverwyck, the cabins were huddled together under the protection of Fort Orange, and now that the winding lanes between them have become streets, and the site of the colony has become the heart of a modern city of a hundred thousand inhabitants, the streets are altogether inadequate for the demands of modern traffic. Some of the buildings, too, are over a century old and rapidly falling into decay.

In February, 1910, it occurred to an Albany architect that this condition could be remedied if the entire area of about eight acres were developed into a plaza, bounded on the west by Broadway and extending to the Hudson on the east.

The local Chamber of Commerce took the matter up, and on a favorable report of a committee which made an exhaustive study of the situation, the city administration was induced to extend the scheme of River Front Improvement which had already been undertaken, to include the creation of a civic center in what had been the most unsightly section of the city.

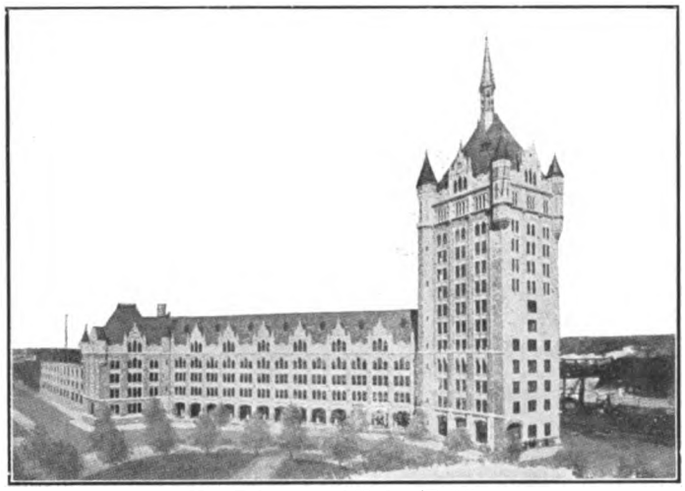
The coöperation of the Delaware & Hudson Company, which owned about half of the land in question, was obtained by granting them permission to elevate their tracks and extend their terminal facilities by the construction of a freight house and yard, on condition that they erect an office building which would screen these necessary but unsightly features.

Because of the irregularity in outline of the site, a type of architecture picturesque rather than formal was desirable, so the Flemish Gothic was selected as the most appropriate, recalling as it does the nationality of the original settlers.

The office building consists of a terminal pavilion and the main structure, both having four stories and an attic; and a tower thirteen stories high. Crowning the tower is a gilded representation of the *Half Moon* which, under Hendrick Hudson, on September 22, 1609, terminated its cruise of discovery within a few yards of this spot.

In complete contrast to the historic setting and the ancient architecture of the building is its up-to-date equipment of modern telephony.

The telephone installation consists of 2 No. 4 type lamp signal switchboards working together, 125 exchange stations, 12 trunk lines to the central office and 1 long magneto line terminating on a trunk strip serving four stations in Troy and Cohoes. This line is thirteen and one half miles long, 2,200 feet being submarine.



New Delaware and Hudson Building

The house cable consists of 500 pairs of wires which are distributed advantageously throughout the building, rendering available facilities for any possible requirement. Continuous telephone service was furnished to all departments during the period of moving from the old building to the new. Appreciation of the efforts of the New York Telephone Company's men is expressed in the following letter from Mr. C. S. Sims.

THE DELAWARE & HUDSON COMPANY, OFFICE OF SECOND VICE-PRESIDENT & GENERAL MANAGER
C. S. SIMS

ALBANY, N. Y., April 16, 1915.

The New York Telephone Company,
Mr. G. H. Staysa, Special Agent,
Albany, N. Y.

DEAR SIR: Now that we have become practically settled in our new quarters in Albany, I desire to extend on behalf of the Delaware & Hudson Company our thanks to you for the manner in which your representatives so efficiently provided an uninterrupted telephone service during the time we were moving from our old to our new quarters.

For your information, we followed out quite an elaborate and systematic scheme in moving. The performance being a continuous one, completing the moving and settling of one department before disturbing another, and the efforts of your people in locating telephones almost simultaneous with our locating desks afforded the greatest possible convenience.

Yours very truly,
(Signed) C. S. SIMS,
Second Vice-president & General Manager.

A. W. Deas

MR. ARTHUR W. DEAS, division auditor of receipts, in charge of the revenue accounting centers in the up-state division was transferred from Syracuse to New York on May 1 and is now in charge of the revenue accounting center of the Long Island division.

Mr. Deas's service with the Company dates back to October 30, 1895, when he was first employed in New York City. About four years later he was transferred to Elmira, N. Y. and was subsequently appointed auditor of the New York and Pennsylvania Telephone Company. Mr. Deas, during the past fifteen years, has also been connected with the Empire State Telephone and Telegraph Company, the Central New York Telephone and Telegraph Company, and the Hudson River Telephone Company. Since 1909 Mr. Deas has filled the position of division auditor of receipts with headquarters at Syracuse.

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It's Everywhere

By Dorothy Thorne

THERE is much in the events of daily life in the war which seems to be an intensified version, an abstracted and concentrated edition, of the everyday affairs of peace. The telephone service in the war, for instance, is so widely varied that it seems to illustrate in a terrible, grim "sample copy" the realm of the telephone in the pursuits of peace. The various ends served by this instrument in war are typical of the multitude of its uses in less picturesque but more productive accomplishments of peace; indeed, a host of peaceful counterparts may be cited for each war-like adaptation of the service. Thus we have the telephone as a source of amusement and diversion; as the instrument of heroism and faithful service through great crises or in the face of peril; as a means of insuring safety and protection; as the nerves of a great business enterprise; and, as in the terrific blunder at Neuve Chapelle, the lack of telephone service as the cause of catastrophe.

In all the reports of the telephone as an entertainer, perhaps nowhere is it more grateful than in this instance, described in the *Daily Chronicle:*

The officer spends lonely hours in the windmill in charge of the telephone exchange from which the batteries are worked. The men in the trenches and the gun-pits pity his loneliness, and invent a scheme to cheer him up. So after dark, when the cannonade slackens, he puts the receiver to his ears and listens to a Tyrolese ballad sung by an orderly, and to the admirable imitation of a barking dog performed by a sapper, and to a Parisian chanson delightfully rendered by the aviator.

Slightly different is this in circumstances, perhaps, yet in essentials nearly related to the examples, of which we have recently had so many, of addresses delivered over the telephone by speakers in one city to an audience in a distant place. The "Transcontinental Cabaret" at the American Newspaper Publishers' dinner the other evening, in which cornet and baritone solos at the Panama-Pacific Exposition were enjoyed at the Waldorf-Astoria, is in reality the first cousin of Tyrolese ballad and Parisian song, heard by the telephone officer in the windmill.

The Russians made an incursion into the town of Memel, recently, and when Field Marshal von Hindenburg rang up the Memel Post Office, after receiving news of the Russian aggression, he expressed to the girl who answered his call "his astonishment and joy" that she and her colleagues had remained at their posts. Prince Joachim, one of the Kaiser's sons, presented the heroine with a silver watch and "words of lively recognition." Our telephone heroines who remain at the switchboard while fire rages in the floor below, as was reported last month, may not receive commendation from king or kaiser, or kaiser's son, but we venture to say that the recognition they are accorded is not less valued. To maintain a service upon which millions of people are depending every minute of the twenty-four hours, for anything from a paper of pins to matters of life and death, is a task of considerable moment; the confidence of the millions is no mean tribute, and more satisfactory to the average American than any more dazzling acknowledgement from the hand of royalty.

Newcastle, England, whose shipyards were undoubtedly the objective of a Zeppelin raid last month, received warning by telephone from Blyth that the Zeppelins were coming. Immediately the lights were flashed out, and the Zeppelins

An English Observation Detachment Telephoning Their Findings to the Men at the Guns, in the Battle at Lille

evidently failed to discern their objective in the darkness, for Newcastle escaped entirely. Thus in war as in peace, for towns as for individuals, the telephone is a prompt and effective source of protection.

The headquarters of a commanding officer are like the main office of almost any business enterprise.

With every point in the field the general is in contact, even while the fight is raging. Even as the troops move forward to the attack, telephone wires move with them, and telephone operators, say three or four or more to a battalion, are in constant communication with an exchange station. That station, again, is in communication with a long circuit by radiating lines, as, for instance, with the Bureau of the General and the quarters of the principal officers.—*London Daily Chronicle.*

The fighting line of commerce is in the same way kept in constant touch with headquarters, and the forces in the field, whether dealing with automobiles or cotton cloth, cambric tea or suspension bridges, are never out of touch with the central idea of the campaign and its new developments. The battles of the European war are indeed being fought by telephone, but all the while in this country the huge battles that are being fought constantly and silently in the conquests of commerce are being won through the agency of the telephone.

Sometimes the negative evidence is even stronger than the positive, and this is peculiarly true in the case of the telephone. We forget sometimes how much we depend upon it, until the time comes when for some reason it is not at our elbow. Picture, for instance, the great commercial campaigns, when a company has thousands of salesmen scattered from Maine to California, from Florida to Washington, and think what would be the result if the great heart of the whole endeavor were suddenly cut off from the thousands of branches; if the coördinated action should suddenly become disjointed. Some new circumstance might arise at headquarters which would enable the entire force to concentrate its energy on one main point through which alone the victory could be won. What if there were no telephone?

The most striking and the most terrific illustration of what the lack of telephone facilities may mean is found in the battle of Neuve Chapelle when the Germans succeeded in cutting the telephone communication of the Allies. The gun fire, which is controlled entirely by means of the telephone, could not be directed and the slaughter of many thousands of Englishmen by English guns resulted.

The London *Daily Chronicle* of February 19 tells graphically of the conduct of artillery action by telephone:

As the attacking party advances the ground in front of them is swept by the shells of the seventy-fives. As the soldiers continue to make progress they would, if the fire was not accurately adjusted, run into their own shells; but at this point the telephone intervenes. The commander of the advancing force signals to the artillery to direct their fire forward, towards any point of the compass, and at any distance desired. The artillery obeys by adjusting the elevation of the cannon, and though the man in front may not be aware of the situation of the guns, nor the gunners know where their shells are falling, yet the accuracy attained is such that it can be adjusted to every fifty, or, at any rate, every hundred yards, of advance.

This explains exactly what seems to have happened at Neuve Chapelle three weeks later. It was the severing of telephone connections that made Neuve Chapelle one of the greatest tragedies of the war.

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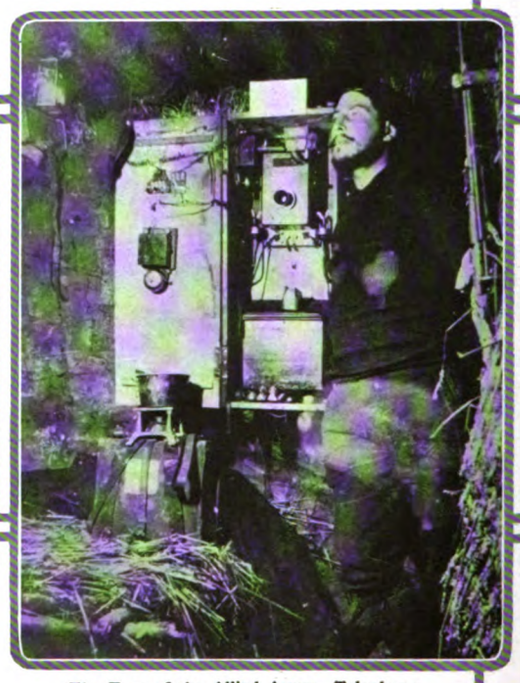
German Staff Officers Communicating with Brigade Headquarters

Telephone de Campagne,—in the Field

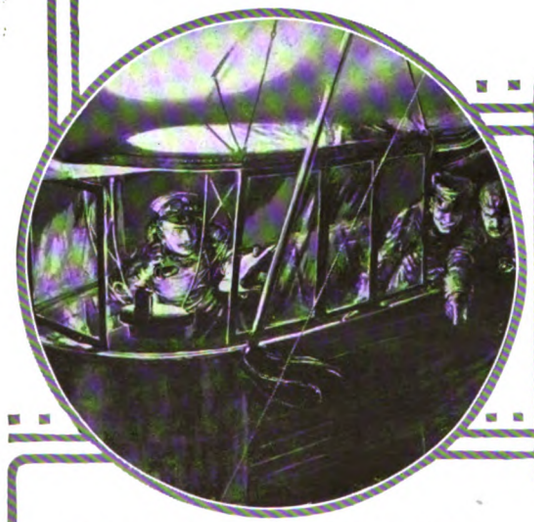
Belgian Soldiers of Fi

Receiving and Transmitting Orders at British Field Telephone Headquarters



The Ears of the Allied Army—Telephone Station in the Trenches

Telephoning Orders— in



The Zeppelin Airships are Controlled by Telephone

German Ordnance Officer Receiving Orders at Field Telephone Station in Russian Poland

Winter Warfare—German Officer Us Prussian Fr

The Telephone the A

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ield Telephone Division

English Artillery Telephoning in the Trenches

Battery Telephone Headquarters of Austrian Artillery in the Carpathians

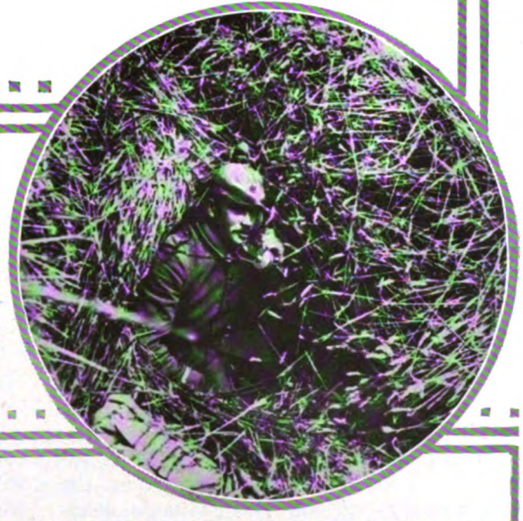
—the Field Telephone
Use

British "Tommies" in the North of France
Connecting Up a Field Telephone

British Field Telephone Operator at Work Near
La Bassee

ing a Field Telephone on the East
ontier

British Telephone Corps Taking Up the Field Telephone
Line in France



German Outpost Telephoning Result of Artillery Fire

Ally of All the Armies

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The TREND of REGULATION

By J. L. Swayze, General Attorney

Residence Telephone Used for Business Purposes

THE Railroad Commission of South Dakota in the matter of Centerville Telephone Company *vs.* C. C. Sheppard, decided, January 4, 1915, that the use of a telephone instrument is the criterion by which it should be classified, and that an instrument installed in the residence of a veterinary surgeon who maintains a veterinary hospital on the premises and has affixed to his dwelling house a sign reading "Veterinary" and on the hospital at his place of residence a sign reading "Veterinary Hospital," should be classified as a business telephone and take a business rate.

Free or Reduced Service Under Franchise Provisions

THE counsel of the Railroad Commission of Florida has advised the Commission that in his opinion the allowance of free or reduced rate service, which is forbidden by the Florida Utilities Act, cannot be validated by a pre-existing franchise contract, basing his advice principally upon the decision in the case of Louisville and Nashville Railroad Co. *vs.* Motley, 216 U. S. 467, in which the court held that the carrier had no right to issue passes forbidden by a legislative Act, even though such passes were provided for by a solemn contract based upon a valuable consideration.

Refund of Excessive Rates

THE Wisconsin Railroad Commission in the case of Charlesworth et al. *vs.* Omro Electric Light Company, on March 2, 1915, held that even if it should be found that respondent's rates were excessive, the Commission had no power to grant any refund on account of past services since its orders as to rates can deal only with future charges.

Burden of Proof

THE Board of Public Utility Commissioners of New Jersey, on the application of the Pennsylvania Railroad and other railroads operating in the State of New Jersey for increased passenger rates, held in an opinion dated March 12, 1915, that the burden of proof to show that the increased rates were just and reasonable was upon the carriers, and refused to authorize carriers to establish such increased rates on the ground that the carriers had not sustained said burden. The carriers submitted the case upon the theory that if it were shown that they required more revenue from their operations and it could be concluded that the entire passenger business was not returning the revenue to which they are entitled, an increase of particular rates must be approved. The Board states that the determination cannot rest upon such grounds and that the increase can be approved only upon the Board's being satisfied that it is just and reasonable, and that specific increases of rates cannot be approved upon proof that the carrier is transacting some part of its business, both intrastate and interstate, at less than a just and reasonable return or even at a loss.

Inspection of Books of Private Corporation Leasing Property of Utility

THE New York Court of Appeals *in re* Public Service Commission of the Second District, 108 N. E. Rep. 94, on January 26, 1915, held, among other things, that a corporation which, as a lessee of space in a depot keeps a parcel room, is not subject to the supervision of the Public Service Commission so as to be under duty to submit to an inspection of its books or to reveal its profits through the testimony of its officers.

Unauthorized Exercise of Franchises

THE Supreme Court of Kansas, in the case of Baxter Telephone Company *vs.* Cherokee County Mutual Telephone Company, decided on February 6, 1915, held that a utility which had been for several years maintaining a telephone system in the city of Baxter Springs, could not maintain an injunction suit against a rival company which sought, under an ordinance of the city, to construct a system in Baxter Springs without first having procured a license from the Public Utilities Commission. The court holds that the Baxter Company has not that peculiar interest in the establishment of the second company as distinguished from the general public interest which would entitle it to maintain such an action, and that the State authority alone can challenge the right of the second utility to invade the field in question.

Free Service to Municipality Under Contract

THE Supreme Court of New Jersey, in deciding the appeal of the Public Service Electric Company from an order of the Board of Public Utility Commissioners, which directed the said utility to continue to furnish free lighting service to certain municipal buildings and offices under the terms of a contract between the city and said utility, made in consideration of the passage and approval of the city's ordinance authorizing the construction of the utility's system, held that the Public Utilities Act, in forbidding discrimination, made the performers of said contract unlawful and that, therefore, the utility could not continue to perform the contract without being guilty of a violation of that statute. The court further held, citing Louisville and Nashville Railroad *vs.* Motley, 219 U. S. 468 and other authorities, that the said contract, although lawful when made, had subsequently become unlawful and that, therefore, the utility was excused from its promise to furnish such free service. The court points out that one of the objects of the Act was to abrogate the granting of gratuities to municipalities and thereby prevent reciprocal favors from being granted to utilities, and that, therefore, where it appears, as it did in the case at bar, that the gratuity was granted to the city in return for the privilege of placing and maintaining poles and wires in the streets, no other evidence is required or necessary than is furnished by the contract to demonstrate that the preference or advantage given by the contract is undue and unreasonable and within the inhibition of the Public Utilities Act.

Utility Cannot Plead the Illegality of Its Own Incorporation to Escape Its Obligation

THE Board of Public Utility Commissioners of New Jersey on February 23, 1915, in deciding a complaint

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of the Borough of Glen Rock seeking to compel the Bergen Aqueduct Company to extend its mains, held that the said company could not plead the illegality of its own incorporation for the purpose of escaping its obligation to extend its mains under its franchise ordinance. The ordinance provided that whenever certain guarantees were furnished the company should make extensions of its mains. The company, as an excuse for failure to make such extension, claimed that it had not complied with a requirment of the ordinance which provided that it should, within thirty days of the passage of the ordinance, file a written acceptance thereof, and that therefore it was not authorized to proceed under said ordinance. It appeared that the company had been operating under said ordinance for more than ten years and that no action had been ever taken by the borough to enforce said acceptance provision of the ordinance. The Commission held, therefore, that said provision had been waived and that the company must construct extensions as provided in the ordinance.

Disconnection and Reconnection Charges to Delinquents

THE Indiana Public Service Commission on February 3, 1915, in approving certain proposed rules of the Lafayette Telephone Company, authorized said telephone company to make a fifty cent charge for disconnection and reconnection to all subscribers within the municipal area whose service was discontinued for failure to make prompt payment in advance, and a similar charge of $2.00 to all subscribers outside of the municipal area whose service was discontinued.

Last-Minute Bid Wins—By Telephone

FIFTEEN thousand dollars' worth of flour marketed in less than ten minutes over a distance of nearly 2,000 miles. This is the fact that has made the Arkadelphia Milling Company an enthusiastic "rooter" for universal telephone service. The Commission for Relief in Belgium, with offices at 71 Broadway, New York City, was to let a large contract for flour at twelve o'clock noon on April 14. Because of the rapid fluctuations of the market, the Arkadelphia Milling Company was unable to quote prices even several hours before the time limit expired. No attempt was made to file a bid until 10.55 A.M. (Central time) when Mr. Adams, the Manager of the Milling Company, in Arkadelphia, Ark., put in a telephone call for the Purchasing Department of the Commission for Relief in Belgium, in New York City. In less than five minutes or just before 12 noon, Eastern time, the purchasing agent, Mr. Broenniman, was on the line. Mr. Adams wrote to the Southwestern Telephone Company:

> The service was so perfect that when I gave Mr. Broenniman my name, he asked me if I was in the City of New York, and when I advised him I was talking from Arkadelphia, Ark., he remarked, "Wonderful, wonderful," and in less than ten minutes from the time we put in the call, we had landed a contract for two thousand barrels of Arkansas flour to be shipped to Antwerp, Belgium, via Rotterdam, Holland for the relief of the starving Belgians.

The *Arkansas Democrat* of Little Rock remarks:

> The sale is one of the largest made in this State and is considered a deal of especial significance in the relation of the telephone to salesmanship, inasmuch as the market was fluctuating constantly and a bid could not be placed until the last moment because of the need of knowing the exact market quotations.

"Selling by telephone" certainly finds indisputable corroboration in this transaction, exemplifying as it does the combination of long distance, speed, and big results.

Honors to Telephone Men

GOVERNMENTS, scientific societies, educational institutions, and the world at large have honored in various ways the leading figures in the field of telephony. On April 14 the New York Electrical Society elected as honorary members Dr. Alexander Graham Bell, the inventor of the telephone; Mr. Thomas A. Watson, who was associated with Dr. Bell, and with his own hands made the first telephone; Mr. John Joseph Carty, chief engineer of the American Telephone and Telegraph Company, and recognized as the leading telephone engineer of the world (and a former President of the Society); and Dr. Michael Idvorsky Pupin, the inventor of the loading coil.

Following the business meeting, at which the election took place, Mr. Watson delivered his lecture, "The Birth and Babyhood of the Telephone," to an audiance of more than one thousand. Mr. Watson having recently returned from San Francisco, where he took part in the opening of the transcontinental telephone line, drew a striking word picture of the contrast between this greatest achievement of the telephone and its humble birth in 1876.

ON Thursday, April 15, Mr. Watson delivered his lecture to what he said was the youngest audience that he had ever addressed. Mr. U. N. Bethell is president of the Board of Education of Montclair, N. J., and he invited Mr. Watson to speak to the school children. On the platform, besides Mr. Bethell and Mr. Watson, were Mr. J. J. Carty, chief engineer, A. T. & T. Co., Mr. Don C. Bliss, superintendent of schools of Montclair, and Mr. H. W. Dutch, principal of the Montclair High School. Besides being the youngest audience he had ever addressed, Mr. Watson said this was one of the most enthusiastic.

ON May 12, Mr. J. J. Carty was elected a Fellow of the American Academy of Arts and Sciences.

AT the annual meeting of the American Institute of Electrical Engineers, in New York on May 18, announcement was made of the unanimous election of Mr. J. J. Carty as president of the organization.

On this occasion, the Edison Medal was conferred on Dr. Alexander Graham Bell, the presentation speech being made by Mr. Carty. Dr. Bell made a short address in accepting the medal, and following this Mr. Thomas A. Watson delivered an address.

It was announced that Mr. Thomas A. Watson had been elected a Fellow of the American Institute of Electrical Engineers.

A more complete account of this occasion will appear in our next issue.

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Main Society

THE 160th meeting of The Telephone Society of New York was held at the United Engineering Building, No. 29 West 39th street, Manhattan, on Tuesday evening, April 27.

Vice-President H. C. Carpenter made his initial appearance as presiding officer, in the absence of the chairman, Dr. F. B. Jewett.

A list of twenty-three applications for membership was presented by the Membership Committee, and the candidates were unanimously elected.

The chairman then read a proposed amendment to the constitution to be voted upon at the next meeting, as follows:

PROPOSED AMENDMENT TO THE CONSTITUTION

It is proposed to amend the constitution in order to provide that the Entertainment Committee, having done such great work in the interest of the Society, shall be a part of the Executive Committee. To effect this change in the constitution, the following amendment will be voted upon at the regular meeting of The Telephone Society, May 18, 1 15:

ARTICLE III, SECTION 4, Paragraph (d):

After "Membership" on sixth line of this paragraph, add "(4) Entertainment," and at the end of the present paragraph (d) add: "The Chairman of the Entertainment Committee shall add to his Committee as many members of the Society not on the Executive Committee as he may consider necessary."

The speaker of the evening was Mr. H. M. Clapp, Superintendent of Telegraphs, Northern Pacific Railway Company, who read a most instructive paper, the subject of which was "A Comparison of the Application of the Telephone in Commercial Companies with its Application to Steam Railway Operation." The extensive use of the telephone and its displacement of the telegraph in the operation of many railways has been a matter of considerable comment, and is of great interest to the public as well as to telephone men.

Mr. J. S. McCulloh followed Mr. Clapp with a short history of the use of the telephone by railroads. Mr. W. H. Keenan, Superintendent of Telegraphs, New York Central Railroad Company, and Mr. P. H. Hyser, Sales Department, Western Electric Company, also commented upon Mr. Clapp's paper. The meeting adjourned at 10.30 o'clock to the fifth floor of the building, where a social hour was spent, with music by the Blue Bell Orchestra.

Hudson Section

THE twenty-third meeting of the Hudson Section was held Monday evening, April 12, Chairman J. P. Hill, presiding. There were over 250 members present, the meeting being the largest of this season. Following the election of several new members and the transaction of other business, the Chairman introduced the speaker of the evening, Mr. B. Gherardi, Engineer of Plant, American Telephone and Telegraph Company.

Mr. Gherardi addressed the Society on the subject "Our Ever-Changing Telephone System." The speaker received very close attention as he told, in interesting manner, and illustrated by lantern, the many remarkable and important changes during the past quarter of a century in the telephone business, especially in the construction and manufacture of plant and equipment. He told of the increased capacity of cables, of the improvement in cable sheaths, of the great strides made in the distribution and location of outside plant, of the refinements constantly going on in central office equipment. He reviewed the advances made in underground construction and its problems, and pointed out the special attention given to new patents covering telephonic apparatus. Mr. Gherardi then briefly described the plan of the organization of the engineering forces of the Bell System and concluded his very instructive paper with some interesting comments and incidents connected with the opening of the Transcontinental line. The members showed their very marked appreciation of Mr. Gherardi's paper by the spontaneous and generous applause which greeted him as he finished.

This meeting, the last one to be held in the quarters of the Accounting Department in the DeGraaf Building, was a fitting close to the many interesting meetings held there since the organization of the Section in 1911. The Accounting Department moved shortly after to the new Telephone Building, so the old walls of the DeGraaf Building will no longer hear the recitals of the trials and triumphs of the art and science of telephony, but the members of the Hudson Section will always retain pleasant memories of the many enjoyable gatherings held in this building. Thus we are again reminded of "our ever-changing telephone system."

Central Section

THE Central Section held its April meeting at the Assembly Hall, Court House, Syracuse, N. Y., on the evening of April 13. Mr. E. H. Powley, Plant Superintendent of the Hudson Division, came to Syracuse and delivered his paper on the subject "Five Years in the Hudson Division." Mr. Powley's paper was most interesting to the members of the Central Section, for the reason that the accomplishments during five years in the Hudson Division are in many respects like the work which has been done in the Central Division. Mr. Powley's paper was illustrated by charts, showing some very interesting statistics regarding the progress of the Hudson Division.

Discussion followed.

Several numbers were rendered by the Central Section Quartet, Messrs. Van Denburg, Tryon, Benjamin, and Lane.

Western Section

THE Western Section of The Telephone Society held its April meetings at Rochester and Buffalo on the 14th and 15th, respectively. The subjects and speakers were as follows:

BUFFALO

"The Traffic Chief's Desk," by Mr. F. A. Kellar, Assistant District Traffic Chief, Buffalo, N. Y.

"The Local Manager's Desk," by Mr. F. M. Wells, Local Manager, Niagara Falls, N. Y.

"The Wire Chief's Desk," by Mr. F. A. Frazer, Wire Chief, Lockport, N. Y.

ROCHESTER

"Cable Construction and Maintenance," by Mr. F. E. Lawn, Desk Clerk, Cable Department, Rochester, N. Y.

"Installation of Service," by Mr. Wm. Sullivan, Installation Foreman, Rochester, N. Y.

The papers at both meetings were very interesting and well received by a large attendance.

At Rochester Mr. A. S. Meade, of the Cable Department, explained the action of electrolysis on cable and the methods employed to offset it.

A general discussion took place after the reading of the papers by Messrs. Neal and Mason at Buffalo, and Messrs. Swartz, Cook, Riley, Torrens, and Gleason at Rochester.

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Rockland Won!

By F. R. Guy, Chief Clerk, Division Commercial Office, Mt. Vernon

THE zest of combat was rampant in Rockland County and the Peekskill district recently when Rossborough and Cortiss, the monarchs of the two realms, met, casually enough, and Cortiss began to explain how he had made his station estimate for the year. Rossborough arose in his wrath and without any preliminaries challenged his neighbor to an extension station contest for the period of one month. Scarcely had the gauntlet touched the ground ere Cortiss had it up and was calling on his trusty salesmen to rally to the standard. Back to Rockland went Rossborough, determined to humble the haughty Cortiss even if he had to sacrifice the office boy to do it.

The fight is on. The first of the month comes and they are at it hammer and tongs. Up in Peekskill, Childs and Smith are doing mighty deeds, putting in extension stations for subscribers who never dreamed there was such a thing, convincing doubting subscribers that the only real cause for rheumatism in the knees is running up and down stairs to answer the telephone, and that an extension is an absolutely sure cure.

Over in Rockland, Ritchings and Bollinger are riding as they never rode before, hurrying over hill and dale until the poor old motorcycle groans and coughs in utter exhaustion. Here a business man who has been spending $5 worth of valuable time each month to save 50 cents for an extension he always wanted; there an old lady who is afraid of burglars and who finally becomes so convinced of the protection afforded by an extension telephone that she wants a head receiver and chest transmitter so she can sleep in it and won't have to get out of bed when the burglar comes.

Comes the tenth of the month and Rossborough has heard no news from Peekskill. The uncertainty begins to get on his nerves and he determines to know the worst. Concealing his anxiety he calls Cortiss and inquires how the extension canvass is coming. Now Cortiss has just received a message via Yonkers that Rossborough has 10 stations, so he gently closes the other eye and remarks that Peekskill has only 12 stations so far (3 was the exact number.) As he hangs up the receiver, Rossborough looks serious; clearly something must be done, and Rossborough dictates an extension station selling talk that would wring 50 cents a month from the hardest heart. Then he sends a hurry call to Plant Foreman Sheldon and to District Traffic Manager Satterlee to join in the battle for the honor of Rockland, and the way they respond shows them worthy allies. Miss Taylor, Chief Operator at Haverstraw, and Messrs. Davenport of Tuxedo and P. McCormack of Nyack feel the spell, and each lends a helping hand to get new business.

All too quickly comes the twentieth of the month. Again Rockland calls Peekskill and again the wire has been at work. This time Cortiss has cajoled the information from the Division Office that Rockland has secured 22 extensions, so he calmly advises Rossborough that Peekskill has secured 25 (in reality 10). Again as Rossborough turns from the telephone he looks perplexed. He has used his heaviest guns, his allies have done their best, yet apparently the wily Cortiss is doing just a trifle better. Far from being defeated, Rossborough is ready to fight to the bitter end, but he sits in a brown study trying to discover some untried resource which shall yet turn the tide. At last he decides on a conference, that last resource of us all when we get in a tight spot. For a time all is gloom in Rockland, but as they look across the river the sun is brightly shining on the hills of Westchester. At last Miss Britt, the stenographer, requests that she be allowed to try canvassing by telephone. She has written up that extension selling talk and listened to the salesmen canvassing by telephone. She is sure she can do the job as well as a salesman. Not only that, but she has some selling ideas of her own. Catching at this hope Rossborough gladly sets Miss Britt to work. First day, 3 stations—immediately the sun begins to shine in Rockland again. Those last ten days are too strenuous for us to follow in detail. It is enough to say that when the sun set on the finals of the combat Miss Britt had 12 extension stations to her credit.

Well, Rockland won with 43 stations for the month. Cortiss says he was so busy boosting the Ossining station gain he couldn't use the strenuous methods Rossborough employed in Rockland. Anyway, they both show a fine station record for the month.

The results don't all come at once, either. In Rockland it is estimated that the gain from this one month's activities will reach, within the succeeding six months, between 60 and 75 extension stations. And the methods developed in this campaign are another important gain. For, having demonstrated so successfully the usefulness of the telephone as a telephone-business getter, Miss Britt set to work, after the excitement of the contest had abated, to apply her methods to directory advertising work. In a little over a month she canvassed 430 business subscribers for directory advertising in the Nyack district—an area of about 300 square miles, having 13 central offices. As a direct result of this telephone canvass, contracts to the value of $200.50 were secured and this wasn't a life and death struggle with Peekskill, either.

The work was done during spare minutes by the use of a short carefully worded sales talk which outlined the proposition in the fewest possible words. If the prospect was interested, a salesman would call and quote rates and show space that was offered for sale. This method reduced the list to the very best prospects, so that the salesmen's time was not wasted in canvassing poor prospects. Contracts were secured from about 40 per cent. of the prospects that were referred to the salesmen. In addition to this, several excellent prospects for advertising in the next issue of the directory were obtained over the telephone, and from one prospect, not only the advertising contract was secured, but a direct line service contract as well.

We all take off our hats to the real telephone saleswoman.

Clear as the Click of the Typewriter

EACH new evidence of the excellence and complete success of the transcontinental line is welcomed by "every efficient man and woman in the organization," for every one of these, as Mr. Bethell said, "has contributed something to the achievement." So the following letter, as another evidence of the supreme excellence of the line, will be welcomed by the employees of the New York Telephone Company:

NATIONAL PRESS CLUB, WASHINGTON

April 8, 1915.

Mr. D. S. Porter, Manager Chesapeake & Potomac Telephone Co., Washington, D. C.

MY DEAR MR. PORTER: Personally, and upon behalf of the National Press Club, I wish to express to you, and through you to the American Telephone and Telegraph Company, the thanks and feelings of sincere appreciation which all of our members entertain toward yourself and the Company for the excellence of the service and the courtesy extended upon the occasion, on April 3, last, of the transcontinental telephonic exchange of greetings between Secretary Bryan and the National Press Club and the San Francisco Press Club, at which time the latter organization's building was dedicated upon the grounds of the Panama-Pacific Exposition.

Notwithstanding adverse weather conditions and the fact that we were talking over a distance of about 3,500 miles every word of the conversation was heard as clearly and as distinctly as I now hear the click of the typewriter which I am now using. It was a wonderful success.

To yourself, Mr. Clark, Mr. Plankington and others who assisted, we are deeply grateful.

With best regards, I remain,

Sincerely,

(Signed) FRANK LORD, *President.*

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Union College Electric Show

Telephone Exhibit the Most Interesting Feature

By F. M. Cozzens, Local Manager, Schenectady

AMONG many extremely interesting exhibits of electrical phenomena and applied electricity at the electric show at Union College in Schenectady, N. Y., early in April, the telephone display attracted the most attention. This is the more noteworthy when the nature of the neighboring exhibits is considered: electro-plating, the operation of an oscillograph, electric welding, an electric railway system with block signals and automatic switches, a wireless telegraph installation in operation, and an X-ray machine competed with the telephone display for the notice of the spectators.

The telephone exhibit consisted of three parts, as may be seen from the illustration.

New York Telephone Company's Booth at Union College Exhibit, Schenectady, N. Y., April 6—7

The central part was a panel 5 x 12 feet, which was divided into 5 sections. The middle section was labeled "Central Office," and upon it was mounted the apparatus for 1 local cord set, 1 operator's set, and 2 line sets, including multiple jacks, answering jacks, and line lamps. Upon each side of this division were the line divisions. In these were mounted underground and aerial cable, No. 14-C terminals, brackets, and twisted pair, while the underground cable box was represented by mounting underground fuses. At the extreme ends of the panel were the sub-station sections in which were mounted No. 12 protectors. From the protectors the lines were carried to the front of the exhibit to No. 334 subscriber sets.

The second part of the exhibit was the power plant, which consisted of a small rotary converter and a model Edison bipolar, which was temporarily connected with a ringing generator. Upon the power panel shown at the left of the picture were mounted the necessary switches, rheostats and meters, one frequency meter, and two voltmeters.

The third part of the exhibit consisted of a 40-line magnetic signal switchboard.

Upon the shelf at the front of the exhibit were displayed various types of receivers, transmitters, pieces of underground and aerial connections, and a coin box public telephone; while under a glass case were shown parts of a receiver and a transmitter. During the show various operations in the completing of a local call and the functions of the different parts were demonstrated, and in all cases the effect of the receiver's being left off the hook was emphasized. A wide variety of questions was asked, dealing especially with the function of the multiple jacks, selective ringing, the number of answering jacks per line; why the toll operator asks for the telephone number in making a toll call, the possibility of an operator's listening on the line and how she does it.

We gave out a large amount of advertising matter consisting of copies of the Transcontinental number of THE TELEPHONE REVIEW, the Van Tassel Series, and The Eleventh Hour book. These were eagerly sought and the supply was not equal to the demand.

The exhibit was installed and operated by Mr. W. R. G. Baker and Mr. L. E. Ballert, Union '16. Mr. Baker while taking the electrical engineering course at Union College is also an employee of the Plant Department.

Organization Changes

Advertising Department

H. G. Stokes, Copy Supervisor, title changed to Copy Manager.

W. E. Johnson, Copy Writer, will report to the Advertising Manager with title of Special Agent.

Accounting Department

A. W. Deas appointed Division Auditor of Receipts, Long Island, succeeding W. J. Creamer.

C. H. Leonard appointed Division Auditor of Receipts, New Jersey, succeeding C. Y. Meighan.

J. P. Hill appointed Division Auditor of Receipts, Hudson.

L. A. Wilcox appointed Division Auditor of Receipts, Central.

H. W. Gaul appointed Division Auditor of Receipts, Western.

C H. Grover appointed Supervisor of Methods.

The Traveling Auditors assigned to the Hudson, Central and Western Divisions will report to the Division Auditors of Receipts of the respective Divisions.

H. H. Nicholson, Traveling Auditor, is assigned to the Hudson Division, succeeding T. M. McDermott.

Central Division

Plant Department

E. G. Featherman appointed Wire Chief at Corning, N. Y.

New Jersey Division

Plant Department

James Mullen, formerly Loop Foreman, appointed Line Foreman, Jersey City District.

John F. Murphy, formerly Chief Line Foreman, Newark District, appointed Division Inspector of Aerial Construction, New Jersey Division.

Elmer P. Bradley, Chief Line Foreman, Hudson Division, transferred as Chief Line Foreman, Newark District, New Jersey Division.

Harry E Naylon, formerly Wire Chief, appointed District Foreman, Morristown Subdistrict.

Nils F. A. Kahnberg, formerly Switchboard Wireman, New Jersey Division, appointed Central Office Equipment Installation Foreman, New Jersey Division.

Westchester Division

Commercial Department

W. Duryea appointed Agent-in-Charge of the Greenwich Commercial Office, reporting to W. A. Bryant, Local Commercial Manager.

F. G. Wellstood, formerly Agent-in-Charge of both the Port Chester and Greenwich offices, will continue in charge of the Port Chester office as heretofore.

Western Division

Commercial Department

C. P. White, Chief Clerk, Lockport Commercial District, is appointed Acting Local Manager, vice C. F. Rees, Local Manager resigned.

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First Tenants in New Albany Building

By A. W. Deas, Division Auditor of Receipts

THE revenue accounting office of the Hudson Division moved from its old location in the DeGraaf Building, 23 South Pearl street, to the sixth floor of the new Telephone Building, 158 State street, Albany, on Saturday, April 17.

New Quarters in Telephone Building

Ordinarily a move from one location to another is of little interest, and the usual time is the first of the month. In both of these matters, the removal of the accounting office is exceptional. The interest, apart from the fact that this is the first of the departments of the Company to occupy space in the new building, is due to the difficulties which had to be overcome, and the manner in which this was accomplished. The time of the month for the removal was decided by a fortuitous combination of circumstances. In the first place, only a few concerns in Albany are capable of handling a removal of this size, and they had been secured for the first of May by the various State Departments that became our tenants in the new building on that date, and in the second place, the busiest period of the Accounting Department is the first of the month, when all the bills and statements have to be rendered.

When the removal was made to the new building, each piece of office equipment was placed at once in exactly the position designed for it. This was accomplished in the following manner: A piece of cardboard was cut to represent each article and numbered correspondingly, the exact measurements being reduced to the scale of the floor plan; these pieces of cardboard were then manipulated on the floor plan until a satisfactory arrangement was worked out, when it became a simple matter to chalk on the floor of the new office the exact location and size of everything, from desks and file cabinets to chairs and waste baskets.

Prior to the day of the actual move, everything was tagged with a "move number," indicating the order in which it was to be taken out of the old office. Therefore, when the truckman arrived the furniture was in readiness for removal. There was no elevator service to handle the furniture and equipment, so that piece after piece had to be taken through the windows and lowered to the street by block and tackle. When the moving vans arrived at the new building, and were unloaded, there was not the slightest confusion in locating each piece just where it belonged.

In all, there were moved some 320 pieces of furniture and equipment, and five two-horse truck loads of files and papers. Not the slightest damage was done to any article, and not a piece of paper was lost, or a file disarranged. The job was completed by seven o'clock Saturday night.

The men of the department came down Sunday morning to make sure that everything was in readiness to resume work Monday morning where it was left off Friday night.

The Old Revenue Accounting Office in De Graaf Building

A Telegram from an Office Boy to a Mayor

WHY not use them there Municipally Owned Tadpoles in your Civic Frog Pond at —— ——, for the establishment of a Municipally Owned Telegraft and Telephone Company? All you will have to do will be to elemonate the Tads and string your wires on the Poles, thereby saving much money to the down-trodden hoy polloy what now has to pay tribute to the lumber trust every time they telegraph or telephone to their wives that they are detained downtown on business and won't be home until mornin'.—(Signed) HENDERSON SQUINT, *Office Boy.*

JOHN KENDRICK BANGS in *Concerning Municipal Ownership.*

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Modern Blue Printing

By R. H. Bauman, Jr., Engineering Department

THE continued demand for the prompt delivery of uniform prints in large quantities has been admirably met by the automatic blue printing equipments of to-day. To bring out clearly the efficiency of these equipments, a resumé of blue printing equipments of the past is necessary.

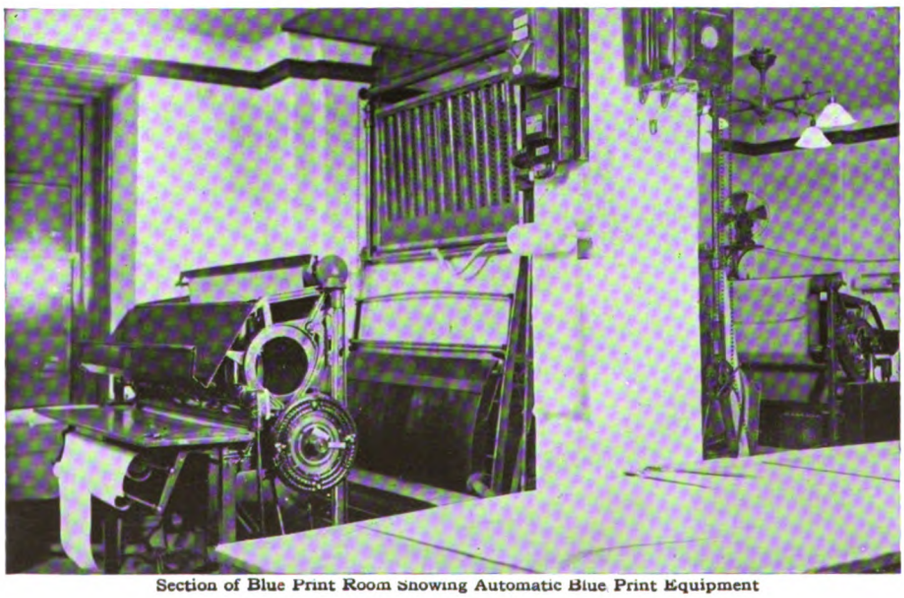
Before the advent of blue print machines employing artificial light for printing, sun frames were used. Many of us will recall these old sun frames with their irritating delays and the attendant difficulties in obtaining satisfactory prints, especially in stormy weather. After the sun frame came the "upright machines," the first of the blue printing machines to use artificial light. These consisted of a large cylinder of plate glass set on end, with a suspended arc light which moved up and down inside the cylinder. This type of machine was followed shortly by the continuous blue printing machines. In the latter a roll of sensitized paper or cloth, with tracings or negatives, was fed into the machine between horizontal rollers and exposed to a row of arc lights or a pair of mercury vapor lamps. While this type of machine produced more prints per hour than any of its predecessors, and had the added advantage of printing tracings or negatives of any length, it did not do away with the laborious and expensive hand washing and drying of the prints. After leaving the printing machine, the prints were washed in a large tank of water occupying valuable floor space, were passed through a wringer to remove the excess water, and were then hung up to dry. This procedure necessarily required the blue printers to wet their hands continually, and admitted the possibility of damaging valuable tracings either through handling with damp hands or by getting water spots on them. Another objection to this method was the appearance of the finished prints, which were often distorted, and seldom lay flat. This was true especially of cloth prints. To obviate such a condition, many blue print rooms installed laundry mangles through which the prints were run after being washed.

With the automatic blue print equipment of to-day this difficulty is entirely eliminated. The machine is operated by one man and produces approximately 50 per cent. more prints in the same time than the old type machine. In these equipments the tracings or negatives and sensitized paper or cloth, up to fifty-four inches in width and any length, are fed from a shelf in front of the machine and carried past a battery of six six-ampere arc lamps, the tracings being returned to a tray just over the shelf. At the same time the exposed paper or cloth is washed in water, then in a solution of either bichromate or ferric cyanide of potash, to insure its permanency, and again in water; it is then carried over a gas heater and dried, and then rolled up, finished, free from wrinkles or distortions, at the back of the machine. All this is done automatically, with the prints in full view of the operator most of the time. These machines are provided with high and low gear and have speeds varying from a few inches to nine feet per minute. Except when large tracings or negatives are to be printed, however, it is not practical to run a machine over five to six feet per minute, since the operator would have difficulty in feeding the machine economically, thereby wasting time, power, and paper. The blue print papers now generally used are much cheaper than the slow printing papers in use years ago, and are coated with a very much faster emulsion to compensate for the speed of modern machines using strong artificial light for printing. In view of this, the prints are now washed with a potash solution to insure their permanency and keep them from fading when exposed to strong light.

Several years ago, because of the advantages in printing by artificial light, the Engineering Department gave up blue printing by sunlight and installed an "upright machine." From time to time, as it was necessary to increase the capacity, additional machines were installed, so that a year or two ago the Engineering Department had four machines of the various types which had been the best available when the machines were purchased. The capacity of these four machines became inadequate, and it was found economical to increase the capacity by replacing two of the old machines with one of the new automatic blue printing equipments. Shortly after, the remaining two machines were replaced with another automatic equipment because of its economy and the much more satisfactory prints it turned out. The blue print room of the Engineering Department, which occupies 573 square feet of floor space, now has two of these new automatic equipments, and supplies at cost blue, white, brown, and black prints, and Van Dyke negatives, on paper or cloth, to all departments of the New York Telephone Company and the American Telephone and Telegraph Company in Manhattan and the Bronx, requiring work of this nature.

Working eight hours, the five men employed on this work could turn out 25,000 square feet of blue prints a day. The other types of prints take longer

BLUE PRINTING FORCE
Left to right—R. C. Trennery, M. Baillie, J. T. O'Shaughnessy, R. C. Taylor, H. Jordan



Section of Blue Print Room Showing Automatic Blue Print Equipment

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to make than blue prints, so the average daily output of prints of all kinds does not mean very much. Some idea of the work turned out by the blue printing room can be obtained from the following figures for the year 1914:

	Sq. Ft.
Blue Prints	893,600
White Prints	16,380
Brown Prints	5,850
Black Prints	11,130
Cloth Prints (Blue and White)	25,390
Van Dyke Negatives	7,575

The peak loads in this work are also heavy—for example, at the times when a number of switchboard specifications have to be gotten up to the Western Electric Company, or the A. T. & T. Company are sending out circular letters requiring blue prints of circuits, etc. As a concrete example of what can be done, 5,000 square feet of finished blue prints were made up on one machine in three and one-half hours on one Saturday morning.

In addition to prints of tracings, some departments require lithoprint copies on either tracing cloth, white paper or heavy Bristol board; photographic reproductions; half tone copies of plates which require enlarging or reducing; and the mounting of maps and charts. The volume of this work is not sufficient to justify the installation of our own apparatus to handle it, so it is given out commercially. In these cases some departments find it more economical to send the entire job to the blue print room, thus eliminating extra work on their part and at the same time obtaining lower prices because of the large number of orders for this kind of work which is placed by the blue print room.

Maintaining the Service

Showing Old Plant Beside New Manhole

THE attached pictures show a sample of the "eruptions" taking place in Lexington avenue. Our East Side subway consisted of cement-lined ducts, which were ripped off by the contractor while constructing the Rapid Transit Subway. The Rapid Transit Engineers designated this corner as a point where the contractor must sink his shaft for the removal of dirt and rock from the main part of Lexington avenue. Therefore the loading manhole had to be abandoned, the loading pots, as it were, being driven from their home. They were temporarily placed at the side of the shaft. After the cement-lined ducts were demolished, the cables were boxed and a temporary wooden manhole built at this point. When the reconstruction period arrived it was necessary to demolish the wooden manhole, moving the old plant over to one side, as shown on Picture 1, and build the new manhole, as shown on Picture 2. The loading pots were also moved out of their locations, as shown on Picture 3. A new loading manhole was built, and new plant is about to be placed at this point.

The Right Training for the P. B. X. Operator

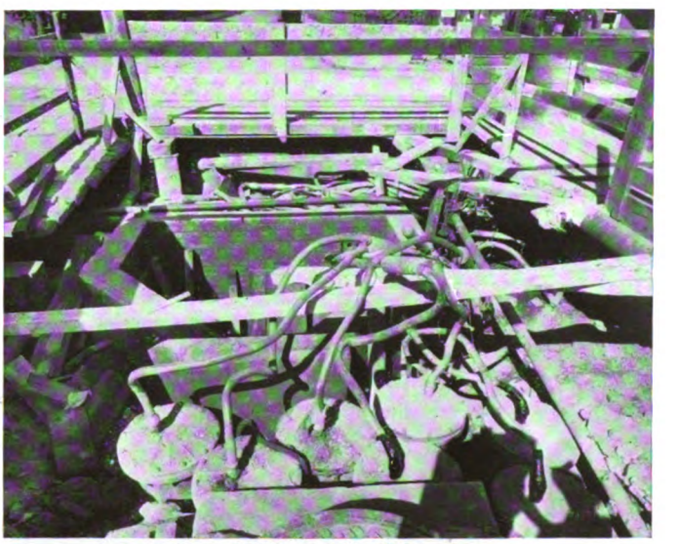
A 40-LINE switchboard equipped with two central office trunk lines and extensions connecting the various departments throughout their large plant has been installed by C. F. Mueller & Company, Baldwin avenue and High street, Jersey City. Realizing the importance of efficient operating of this exchange, both from the standpoint of coöperation with the central office of the telephone company and in rendering the service to their customers, the firm selected a switchboard attendant trained in one of the telephone company's exchanges, and one who has had experience in all lines of telephone work. A great deal depends upon P. B. X. attendant in making friends for the house, and to her ability as an operator must be added the voice with a smile which wins. I shall be glad to continue to receive THE TELEPHONE REVIEW in my new position.

(MISS) BELLE C. MULHOLLAND.

Boroughs Recognize Telephone Usefulness

DURING the month of March, in the Passaic District, Salesman C. N. Elliott, Jr., secured two contracts within a week of each other for Municipal P. B. X's with stations equipped with iron pole boxes for use as police signal systems. One contract was with the Borough of Lodi, and the other the Borough of Garfield. Thus is the telephone being adopted more and more extensively by municipalities.

Showing New Manhole



Showing Loading Pots

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Construction of a 44-Duct Subway Under the Tracks of the New York Central at Park Avenue and 178th Street

By Clifford M. Hartley, Empire City Subway Co.

AN interesting subway, and one presenting more than ordinarily difficult construction features, was built last season, at Park avenue and 178th street, by the Empire City Subway Co., Ltd. This line extended from a manhole at the southwest corner of Washington avenue and 178th street, west through 178th street, to a manhole at the southeast corner of Park avenue. From this manhole it was carried under the tracks of the New York Central to one on the southwest corner, and from there west on 178th street to the vault of the new Tremont central office, located at the southeast corner of Webster avenue and 178th street.

This building was recently enlarged, and a new switchboard installed, known as Fordham. The new subway was needed to provide a connecting link to the rear entrance of the central office, and will also serve to relieve the existing duct lines on Webster avenue, and to shorten the cables running east. It will, further, obviate the necessity of taking steps involving considerable expense to remedy conditions existing in the cable plant crossing the 177th street bridge, which is picking up a large amount of stray current from the trolley tracks.

This article will deal principally with the section crossing under the railroad property, the general plan and layout of which is shown in Fig. 1. This subway consists of 44 multiple clay ducts, the formation of the section under the tracks being six six-way and two four-way, laid as shown in Fig. 2.

The center line of the subway, as originally planned, was coincident with the south rail of a foot-bridge over the tracks at this point. Before construction was started, when the line was laid out on the ground, it was found that such a location was impracticable for the following reason: In order to support the tracks during the construction of the subway beneath them it would be necessary to drive piling, and the pile-driver could not be operated so close to the foot-bridge. The line under the tracks was therefore shifted seven feet south, though the location of the manholes remained the same, thus making necessary a slight reversed curve in the line, where entering the manholes.

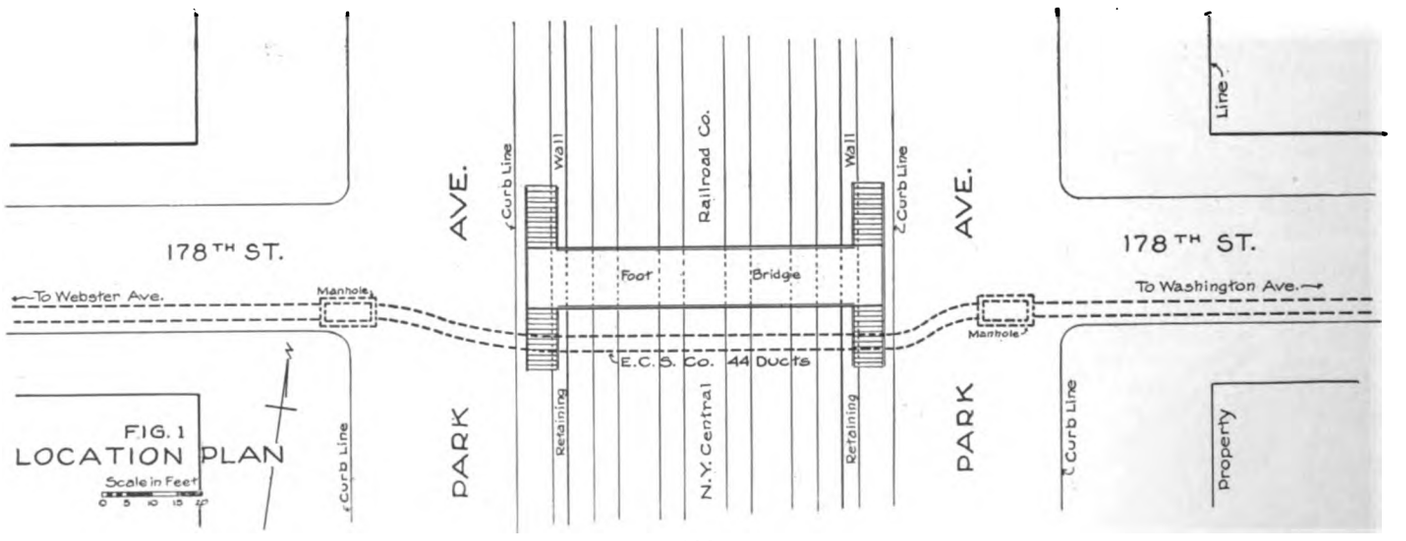
The railroad at this point is in a cut, the base of rail being about ten feet below the street level. It is a four-track, third-rail system. The banks of the cut on either side are supported by masonry retaining walls. This is the main line of the New York Central and the traffic is very heavy, particularly during the morning and evening rush hours. There is an average of 265 trains per day passing this point, and by reason of this great volume of traffic it was necessary to do the pile-driving at night.

Each track was supported in the following manner: at a distance of 3 feet on either side of the center line of the subway, 3 piles were driven, one between the rails and one outside of each rail, making a total of 6 for each track, or 24 for the whole job. These piles were 25 feet long and 12 inches in diameter at the top. They were driven to a depth of 15 feet, cut off, and capped, the diameter at the top then being about 10 inches. On top of the piles was placed a 12x12 inch sill. Each running rail was supported by 7 eighty-pound rails, 33 feet in length. These were placed directly under the ties,and parallel with the track, 4 upright and 3 upset, making a very tight and compact support. To make the construction still more rigid, these 7 supporting rails were "shived" and bolted to the ties. They rested on the sills on either side of the excavation line, and the ends, which extended back of the piling a distance of 13 feet, were supported by mud sills, 3 on each side. (Fig. 2.)

The whole job was certainly involved in difficulties, the retaining walls being so close to the track that it was hard to find room to store materials. Further, it was necessary to take the pile-driver a distance of 1.4 miles north, or 1.8 miles south, in order to switch it to another track at the approach of a train on the track upon which they were working.

Immediately upon the completion of this work, excavation of the two shafts was started,the shaft on the east side being opened first. This was carried down a distance of six feet by the usual method of shoveling out by hand; then, instead of relaying the material by shoveling on to scaffolds, a tripod carrying a Yale & Towne chain hoist was installed. With this hoist were used three iron buckets holding 1.4 cubic feet each. This arrangement, however, proved rather slow and expensive, the buckets coming to the surface at about three-minute intervals, which meant but one cubic yard of material per hour, provided a steady pace were maintained. The chain hoist was therefore discarded, and a hand winch installed, which proved more satisfactory, as the time of the operation was reduced by one minute, the operating force remaining the same.

The excavated material was a sandy loam. At a depth of 14 feet, water was



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encountered in considerable volume. The method of handling this water will be described later. The shaft excavation was all tight sheeted with 2x9 inch sheeting, in the usual manner, the rangers and braces being 6x8 inch stuff. After a 20-foot depth had been reached in the shaft, the tunnel under the tracks was started. The shaft on the west side was excavated in a similar manner to the one just described, and the tunnel driven from both ends.

The tunnel was six feet high and five feet wide, and on the floor was laid a track made of angle irons, on which were run small flat cars. The buckets were filled and placed on these cars, hauled to the shaft, and thence to the street. The cars were operated by ropes, the operation being controlled by means of whistles, and this whole method proved most efficient.

A flow of water which might have proved very troublesome was handled in a manner that left nothing to be desired. A sump-hole was dug in each shaft, and a drain composed of six-way multiple tile, embedded in broken stone, laid along the side of the tunnel. The water thus drained to the sumps was dumped out by two gasoline driven diaphragm trench pumps, one at each shaft. It was necessary to have four pumps on the job, as they were operated continuously night and day. This water was evidently an underground spring, as it was clear and very cold, and the flow, which amounted to approximately 100,000 gallons per day, was very constant.

An interesting feature of the work is the manner of shoring the retaining walls on either side of the tracks. It was the opinion of some that this was the "nicest" part of the whole job, from an engineering standpoint, such opinion being based on the fact that these are masonry walls, and consequently not at all self-supporting over such a span, as would be a concrete wall. We will take, for instance, the east wall, the base of which was about 5 feet below the base of rail, and 6 feet thick. On the floor of the excavation, and perpendicular to the longitudinal axis of the wall, were placed two 6x8 inch wall-plates, 6 feet apart. Each of these supported four 6x8 inch struts, 5 feet long, across which, in turn, was placed a 6x8 inch cap. Between these caps and the bottom of the wall were six 6x8 inch beams, crosswise of the excavation. It may be well appreciated that the vibration caused by passing trains but 5 feet distant, was considerable.

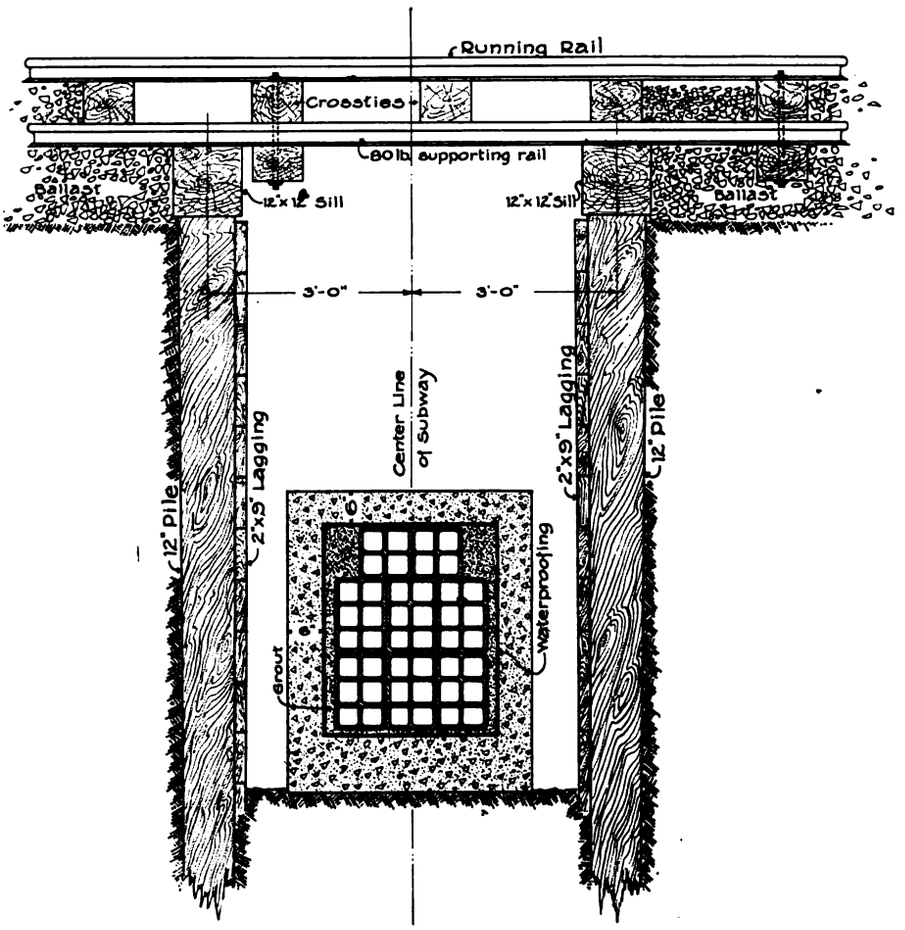

FIG.2
CROSS SECTION UNDER TRACKS
SCALE IN FEET
0 1 2 3

The banks of the tunnel under the tracks were taken care of by spiking 2x9 inch sheeting, or lagging, to the piling on either side of the trench. At this depth the excavation was in coarse sand, very easy to shovel, but, of course, requiring sheeting and bracing wherever exposed, even on the face of the heading. Progress at this stage was slow. Every possible precaution was taken, with very gratifying results.

Upon the completion of the excavation a 1 : 2 : 4 concrete base, or floor, one foot thick, was laid, with side walls of 1 : 2 : 4 concrete, 6 inches thick and 4 feet high. After the forms were removed waterproofing of four-ply tar paper was applied to the floor and the inner faces of the side walls, with hot pitch. The tile was then laid, on a one-inch mortar bed, in the usual manner. The duct formation, envelope, etc., are shown in Fig. 2. The waterproofing was carried up over the top of the conduits, with a lap of 6 inches and the annular space between the tile and the concrete side walls was filled in with grout. A 6-inch concrete slab was then placed on top the tile, and bonded to the side walls by a V-shaped key left in them for that purpose.

The laying of this tile was attended with difficulties, on account of the cramped quarters, and the fact that all materials had to be lowered down the manhole shafts, and carried back to the point where they were to be used. The section under the tracks was level, the floor of the tunnel excavation being 21 feet below the street grade. At either end, after passing under the retaining walls, the ducts rise to enter the manholes. On the east side this rise amounts to 7.5 feet vertical in 25 feet horizontal, and on the west to 9 feet vertical in 35 feet horizontal. On account of the fact that the line had, at these two points, both a vertical and horizontal curve, it was necessary to use many short lengths of tile, or pieces of 12, 9 and 6 inches in length.

The two manholes were built of reinforced concrete, using a 1 : 3 : 5 mixture, and the walls, chimneys and roofs were of standard design and section. The manhole at the southeast corner is 9 feet by 4 feet in plan with headroom of 8 feet, 4 inches, and a total depth of 16 feet 8 inches. The one at the southwest corner is 9 feet by 3 feet, 6 inches in plan with headroom of 10 feet, 4 inches, and a total depth of 15 feet, 6 inches. The construction of the forms for these manholes, the mixing and placing of the concrete, etc., involved nothing of particular interest. Most of the concrete was

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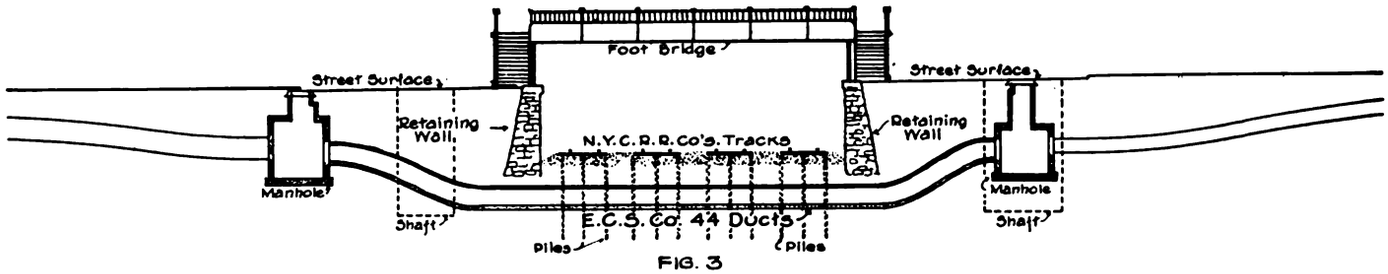

FIG. 3
LONGITUDIMAL SECTION
Scale in Feet

mixed in a small continuous batch machine mixer.

After removing the forms, the inside walls were rubbed down and finished, and the backfilling completed, such lumber as it was possible to draw being taken out. The track supports and sheeting under the tracks were of course left in place. Great care was exercised in back filling and tamping, particularly under the tracks, and under the two retaining walls, in order thoroughly to insure against any future settlement.

The work described, and the method of carrying it on, was designed under the direction of Henry S. Swain, engineer of the company, and its execution was in the hands of George Nostrand, division engineer, and John Glennon, supervising foreman.

Learning by Experience

EXPERIENCE is the best teacher" and "Learn wisdom by experience" are familiar maxims, but not half their truth is utilized by the average person. When we have "learned a lesson" we say to ourselves "Learn wisdom by experience," and the next time a similar circumstance arises we remember our former lesson and, if we are wise, act differently. All of which is, of course, eminently right and proper; but why limit our conception of the word experience to the idea of hard knocks? We can experience things without being bowled over by them. And we can probably learn more from experiencing things by observation, than by all our headlong catastrophes put together. Incidentally the more we learn from this milder kind of experience, the less likely we are to have to wait for our instruction for the disasters to befall us.

Keeping eyes and ears alert isn't all that is necessary for observation. If observation is to be a part of experience the mind must take in what the other faculties bring to it for reference, and must apply these things to its own problems. Application is the secret of all real experience. Even a hard knock will teach us nothing if we do not apply its meaning. What we read about our business, what the man beside us tells us happened to him, what he leaves undone, or does especially well, in all these things there are pointers for us if we will apply them to ourselves. We may read twenty articles on how a certain situation was met, but if, when we are called upon to meet a similar problem, we have not made those twenty articles ours, have not made them a part of our intellectual equipment,—in short have not *experienced* them, we shall have gained little by our reading, and shall have to work out our own solution of the problem, probably with far less satisfactory results than if we had had something to go by.

By *experiencing* what we read and see and hear about our business or anything else in which we are interested—and experiencing a thing means taking it in, making one's mind react to it, and establishing it as a part of the furniture of one's mind—by really absorbing these things we can learn numberless invaluable lessons, and in so doing increase our proficiency in the field of our endeavor.

"We Almost See Their Faces"

SO many employees who talked from New York over the transcontinental telephone line have expressed a desire to see what Mr. H. A. Leslie and Mr. H. U. Linkins look like, that one message sent over the wires was a request that they forward their photographs to us for reproduction. One or both of these gentlemen were at their end of the line every morning day after day, when the conversations began, at nine o'clock in New York. This meant 6 A.M. in San Francisco—an hour by the clock when those with whom they were talking were still slumbering snugly in their beds. These gentlemen conversed with hundreds of unknown persons, always cheerfully and entertainingly, and in the voice with a smile. Too much praise cannot be given them, not only for carrying on one end of the conversations, but for making what was a wonderful experience for our people, also a most pleasurable one.

H. A. LESLIE

H. U. LINKINS

We also reproduce the photograph of another gentleman, Mr. George W. Peck, who has conversed frequently with New York, and who is responsible for much of the success of the Bell Exhibit at the Exposition. Mr. Peck was sent on from New York by the A. T. & T. Co., and it was he who managed the San Francisco end of the transcontinental reception held in Dey street for the wives and friends of the officials, and who carried on most of the conversations on that occasion.

GEO. W. PECK

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Appointment Call Closed the Deal

Transcontinental Telephone Line Scores Again

"GIVE me the San Francisco operator, please."

Mr. E. S. Edmondson, advertising manager of the *Philadelphia North American*, had come to New York for a business conference, although he might have telephoned, and was fated to find that the telephone way is the best way after all. Of course, Philadelphians like to come to New York anyhow, telephones or no telephones, and as a matter of fact, Mr. Edmondson does use the long-distance telephone extensively, as all successful newspaper men do. Mr. Edmondson is a successful newspaper man, as the position he holds indicates.

"Give me the San Francisco operator, please," was a new phrase in his mouth, however, and its utterance by him on this occasion was a vindication of the aphorism, "Out of the fullness of the heart, the mouth speaketh," for Mr. Edmondson was anxious to talk to a man in San Francisco on a business matter of the utmost and most urgent importance—and the way was open. After dining with his business confrère at the Hotel Vanderbilt in Manhattan, and having disposed of the matter which brought them together, Mr. Edmondson's mind turned to an important business deal pending with a man across the continent—over three thousand miles away, five days' journey by the fastest train. His thoughts spanned the distance in an instant, and he knew that if he could talk over the matter for just a few minutes he could close it, but time was an essential element of the transaction, and time was pressing.

Turning into one of the public telephone booths in the hotel lobby, he said, "Give me the San Francisco operator, please," and then placed a call for the party he wanted to reach. Mr. Edmondson had attended the celebration in Philadelphia which marked the opening of the transcontinental telephone service, and knew from his own experience on that occasion that the conversation which he proposed to have was as practical and feasible as talking over shorter distances. In a few minutes he received word that the gentleman with whom he wished to talk had left his office in San Francisco and was on his way to his home in the suburbs. There was no charge for this information, but there was a great satisfaction to Mr. Edmondson in the knowledge that he had only to try again. Consequently, he made an appointment call for ten o'clock the next morning, San Francisco time, and one o'clock, New York time. Then he went about his affairs for the rest of the evening with a confidence born of assurance.

A few minutes before one o'clock, the next day, he presented himself at the hotel, ready to receive word that the connection had been established. Observing, however, that all the telephone booths in the hotel lobby were occupied, and there was a great demand for them by other guests, he went to his room, after leaving word at the desk where he could be found. As all modern and fully equipped hotels have a Bell telephone in every room, Mr. Edmondson had both the freedom and privacy which he desired. It occurred to him that to save time while talking it would be a good idea to make a memorandum of the points which he wished to cover in his conversation. At the ring of the bell he was ready, and instantly recognized the voice of the party in San Francisco with whom he wished to talk. Within the initial period of three minutes, Mr. Edmondson was successful in consummating the transaction, just as he had hoped, and which, because of the personal element that predominated, meant many times more to him than the large amount of money that was involved.

This was a case in which the success of a large and important transaction depended upon instant intercommunication between the two principals concerned, and there was only one way humanly possible, and that way was the telephone way.

It is easy to understand Mr. Edmondson's enthusiasm over the value of long-distance telephone service after this experience. He is more convinced than ever that bankers, manufacturers, merchants, wholesalers—in fact, business and professional men of every description, have not half appreciated the wide and varied field of business opportunity which the telephone opens up to them.

Financing by Telephone

"THINKING in Nine Figures," which recently appeared in the *Saturday Evening Post*, is an extremely interesting article by A. W. Atwood on some aspects of finance to-day, and aside from its general value as a commentary on an important phase of modern business, it has much of professional interest to telephone people. The enormous proportions of financial transactions of this decade are ascribed to three causes:

1. The growth of wealth. To-day the corporations are vastly larger than they were fifteen or twenty years ago, the banks are consequently larger, there is more gold and more wealth.
2. The telephone.
3. Growth of personal confidence.

What, precisely, is this condition which the telephone ranks second, even above "personal confidence," in making possible? The author describes it thus:

It was only a few years ago that such a phrase as the "hundred-million-dollar era" was invented. The words could not have been used sooner because the boldest of financial imaginations had never gone so far. But to-day the overnight formation of $100,000,000 gold pools and the creation of $600,000,000 bond issues pass almost unnoticed. We have come into the empires of finance, leaving the tiny principalities far behind.

Without the telephone, these empires of finance must have remained unclaimed, for, as the author states:

The mere growth of wealth alone would never have made it possible to deal in hundred millions with the ease that formerly characterized the million-dollar transaction. To bring wealth together quickly when it is most needed has been made possible only by the cable, the telegraph, the twenty-hour train from New York to Chicago and the telephone, but most of all by the telephone.

At the outbreak of the war, the city of New York alone owed $80,000,000 in London and Paris, coming due on January 1, 1915.

Under ordinary circumstances this debt would have been paid off by shipments of cotton, grain, foodstuffs and other commodities, but the English were frantic for money.

"You must pay now," they fairly shrieked, "and you must pay the entire $80,000,000 in gold."

Two members of the firm of J. P. Morgan & Co. received the city officials in the firm's office.

"Give us a night to think it over," the bankers said. "We will go out on Mr. Morgan's yacht and to-morrow morning we will let you know."

The next morning a plan had been devised and was at once put into action over the telephone, each bank in the city being informed in this manner that its share of the money, determined in proportion to its deposits, would be so much. A large shipment of gold was soon made, and after this object lesson, the foreign nations no longer demanded gold.

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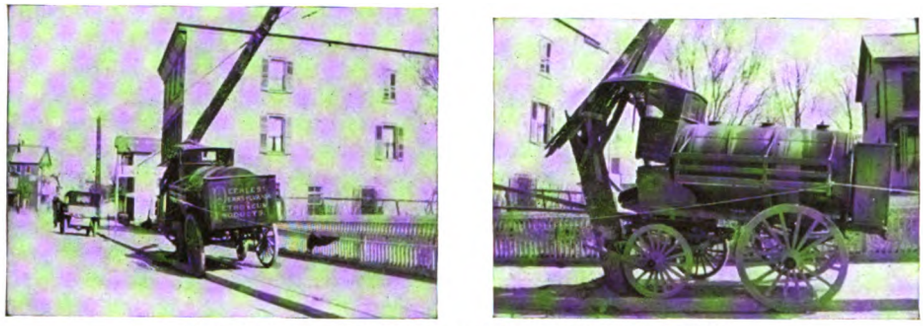
Here and There



Stopping Runaways is Dangerous Business for a Telephone Pole

An Inanimate Hero

A HEAVY oil wagon drawn by a three-horse team was standing in front of a grocery store in Bay Shore, Long Island, recently, when a piece of paper, blown by the wind, frightened the horses and sent them tearing down the street at a break-neck speed. Nearing a truck which was just pulling away from the excavations for a new building, the runaway horses swerved and the wagon struck a telephone pole. By a miracle, the horses were uninjured, but the pole did not escape so well, as may be seen from the pictures taken just after the accident. If it had not been for Pole 1585 in the path of the runaways, a laundry just beyond, where a number of people were at work near the front window, would undoubtedly have been struck and the results might have been extremely serious, for the tremendous impact which splintered the pole could hardly have concentrated its damage within such a small area if the building rather than the pole had been struck. Pole 1585 surely suffered in a good cause. W. M. HINE, *Wire Chief, Bay Shore, L. I.*

The Telephone in Detective Work

THE rôle of detective is another part which the accomplished telephone can assume when occasion requires. In the Bronx recently a telephone call came in to the detective bureau for Captain Wines. Detective Schuing, who took the call, recognized the voice and detained the man in conversation, Captain Wines being absent. Calling another detective to keep the man on the wire, Schuing went to another telephone and traced the call to a public telephone station on Third avenue. Schuing hastened there with a patrol wagon, the detective on the telephone doing his part valiantly, keeping the man busily engaged in conversation until Schuing burst into the booth. The man proved to be the one Schuing had suspected—one for whose arrest a warrant had been issued. Schuing had arrested the man for burglary several years before, and the newspapers said the telephone transmission was so perfect that the detective could recognize the voice even after two years.

Far Cry

"MISTER, will you give me some change? I'm stranded here, and I want to call up my home."

"Certainly, my good man. Where do you live?"

"San Francisco."—*Baltimore American.*

A Wee Citizen of Old Forge Learns the Power of the Telephone

A DRAMATIC incident in connection with the use of the telephone is described by Mr. F. J. Lynch, Local Manager of the Black River Telephone Company, Old Forge, N. Y. A tiny tot, daughter of a subscriber, told her mother she was going to visit a little chum on a nearby street. Several hours later the mother learned that the family where her child was to visit had left home for the day, and she began to feel anxious over the continued absence of her daughter. A search was instituted, but met with no success. Finally, thinking the family might have returned, the distraught mother called them up by telephone, and after a long wait she heard a tiny little sobbing voice whisper brokenly "Hello." When the mother spoke her voice was recognized at once, and the child cried out, "Please Mama come and get me. I am all alone, locked up in Freddie's house, and can't get out." When the family went away, they left the front door ajar with the night latch on, and when the little one entered, she closed it behind her, making herself a prisoner. The child is scarcely three years old, and when the telephone rang, she had to climb a chair, and then scale the heights of a table before she could reach the instrument.

"Study Your Telephone Textbooks"

CONSTRUCTIVE suggestions from employees of the Company are always of value. Even if they do not prove to be practical, they are significant as showing an awareness and business vitality on the part of those who offer them, which is an asset to the individual and to the business as a whole. A suggestion of eminently practical value is made by E. H. Behlendorf, Deskman in the Poughkeepsie office, and the experiment it proposes merits a thorough trial. Mr. Behlendorf writes:

Something has just come to my mind which must have an outlet.

How often one hears the old advice given from the pulpit about studying the Bible. It is oft repeated.

Why not apply similar advice to men employed in telephone work?

"Study your telephone text-books" should be a slogan of the Company. If every employee studied merely one-half hour each day, what a marvelous insight into telephonic art would be achieved. And not only that, but what a bright army of employees we'd have!

Actual work during the day and a little mental manipulation at night, added to clean living and wholesome amusement make this old world of ours an enchanted palace.

Carry the good thought a step further and "Study your advertising literature." There is much there to learn about the business.

A Practical Argument For Private Ownership

AS the opinion of a prominent New York journalist the remarks on government ownership in the following letter are especially interesting, not to say significant. Commendation of expeditious service is always welcome and encouraging, and the Ossining force is to be congratulated for the good work that called forth this just and significant comparison between our own and European methods:

April 5, 1915.

Mr. J. M. Reynolds, N. Y. Telephone Co., Ossining, N. Y.

MY DEAR MR. REYNOLDS: I am enclosing contract which I signed for the telephone at the log cabin.

I want to compliment you on the remarkable expediency with which this telephone was placed.

It bears out my contention against government ownership of telephones, which I have studied abroad, and which I have written about. It would have taken endless "red tape" for the installation of a telephone at this place by the government, if European methods are any criterion.

Also it is quick action on the part of such employees as you seem here to represent that makes possible the efficiency of the Telephone Company.

Appreciative of your efforts, I am,

Sincerely yours,

(Signed) SOPHIE IRENE LOEB.

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Asbury Park Arranges to Furnish Information by Telephone

SOME time ago the suggestion was made that each city, village and town should post its name on all the principal roads entering its limits so that automobilists might know "where they were at." No one needs a sign to tell him when he is in Asbury Park, but that most popular of Jersey shore resorts has to answer a lot of other questions. In order to make it simple and easy to obtain prompt and correct information the city information bureau has placarded the city as follows:

Ask us—we know. City Information Bureau, telephone Asbury Park 900.

The placard does not even say where the city information bureau is located—that is not important. It is quite sufficient to state the telephone number.

Commenting on the new arrangement which provides such a great convenience for residents and visitors in Asbury Park, the *Press* of that city says:

It is a sort of departure from the "ask a policeman" method, not that the police are not walking bureaus, but there are hundreds of subjects with which they have neither the time nor the means to acquaint themselves, while the information bureau has answered such questions as, "Is it raining at present in Brooklyn?" "Is Mrs. Rogers, of Syracuse, still in town, and where?" "How many fish has my husband caught on the end of the pier?" "Tell me where I can dispose of a cat and six kittens." This class of information is given attention, but the bulk of the service concerns railroads, boats, trolleys, mails, weather, tides, temperatures, hotels, cottages, arrivals, churches, amusements, entertainments, lost and found, lost children, fire and police. During the winter and early spring months this service is available from 9 A.M. to 6 P.M. on week days and on Sundays from 2 P.M. to 6 P.M. From the first of May until October the service is at the public disposal from 8.30 A.M. until 10 P.M., Sundays included. The information bureau is to be always "Who's who and what's what."

Service in the Monmouth District

FROM the Monmouth District this month come three very interesting stories, each widely different from the others, yet each in its own way spelling loyal service.

The Chief Operator at Lakewood tells of a middle-aged lady who visited the Lakewood central office for the purpose of securing the address of a certain apartment house in New York City. While in the central office she remarked that, although an American by birth, she had spent twenty-five years in France, having only recently returned from there on account of the unsettled conditions. She said that she had had the privilege of seeing the operators at work in a central office in Paris, and desired to compliment the Lakewood operators on the comparative ease and quietness with which they worked. The foreign office had impressed her as being very noisy.

The Sea Bright Chief Operator recounts the story of an interesting rescue from burglary:

At 1 A.M., a line signal indicating a call was received from a certain subscriber's line by the night operator in our Sea Bright central office. The operator received no response to her answer, "Number, please?", and accordingly connected the "howler" to the subscriber's line. Later the subscriber called and advised the Chief Operator that a burglar had entered her home, and in "going the rounds" had knocked the telephone receiver from the hook. The noise caused by the "howler" frightened him, and in making a hasty retreat he caused so much noise that it awakened the family, who were, of course, extremely thankful for their telephone, and the service which it stands for.

Loyalty begins early in Toms River, if one may judge from this appealing story for which we are indebted to the Chief Operator:

Following a fire in Toms River, the agent's son, a boy of eleven years, made several trips, unobserved, to the location at which the fire had been and brought to the central office, piece by piece, the equipment from two telephones. It is needless to say that this little fellow is an enthusiastic "telephone man."

Commendation for Ithaca

MR. H. S. ESTCOURT, editor of the *Ithaca Journal*, recently wrote a very cordial letter of appreciation to L. M. Smith, District Traffic Manager, Elmira. The immediate occasion of the letter was an extremely good example of toll service, but that the writer took this occasion to express feelings of appreciation of long standing is evident when we read:

With a feeling that a telephone company gets a little more than its share of complaints, I want to reverse the order of things. I want to tell you that your Ithaca exchange is proving to me almost every day that it "is on its job every minute." The young women who are employed there are without an exception courteous and evidently most eager to serve the best interests of the patrons of the exchange.

And again:

The thoughtfulness of the operator and her very evident desire to please a patron of your company made a deep impression upon me. You are certainly to be congratulated on having such a courteous, conscientious corps of workers as you have in Ithaca.

If it is no infringement of your rules, will you please convey to the operator who was so thoughtful of my interests, my sincerest thanks, and will you also please commend her for being so "everlastingly on her job." It was, perhaps, a small thing for her to do. Perhaps it was only in her line of duty; but I am possessed of a desire that she know that I appreciate that she did something for me that would not have been done had there not been a splendid esprit de corps in your office. It is just the sort of spirit which she displayed that makes possible the high standard of efficiency which is maintained in your Ithaca office.

Never Too Late to Telephone

WHEN women and the telephone get together, something is pretty sure to be accomplished, no matter what the opposing odds may be. The other day a town vote was taken in Metuchen, N. J., to decide the question of accepting a gift of land offered to the town for school purposes. The site was opposed by some of the men, but the women voters favored it. The reasons for this difference of opinion might throw some interesting lights on practical questions of woman suffrage and municipal government, but the report remains discreetly silent on these details. The point is that the women knew where to find a ready and proficient ally for their cause.

When the acceptance of the proffered land seemed in danger of defeat one of the ladies "got the telephone into action."

"Come, Mrs. Blank," was the message, "Come at once; we need you. And bring your husband with you. We want the votes."

The Blanks had retired for the night, but even the prospect of rousing themselves, donning their clothes, and walking a mile to the meeting (a prosaic test of courage perhaps, but a real one), did not deter them from being on hand to help win the new school property.

Telephone First

"TELEPHONE first" is a good companion cry to "safety first." When it's too late for "safety first," the telephone is the next best move. A boy in Brooklyn swallowed iodine by mistake the other day, and his brother saved his life by prompt use of the telephone. He called a hospital to send an ambulance, and the doctor who answered told him to put starch in milk and give as much as possible to the sick boy. By the time the ambulance arrived the boy was out of danger. "Telephone first" had saved his life.

A British Telephone Achievement

OVER 450 telephone exchanges have been opened in the United Kingdom within the last three years, and 800 call offices were opened in 1914, according to a recent report. The proud boast is made by the advocates of the British system that "no county in England or Wales is now without telephone service." This would hardly appeal to the American public. "No county without telephone service" is not the American idea of telephone achievement. Private enterprise in the United States has given nearly every other farm a telephone; the telephone development in rural sections of this country is larger than in some English towns.

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EMPLOYEES ARE INVITED TO SEND IN ACCOUNTS OF ALL ATHLETIC GAMES AND MEETS IN WHICH THEY PARTICIPATE, TOGETHER WITH PHOTOGRAPHS, IN ORDER THAT OUR REPORTS OF SUCH ACTIVITIES MAY BE MORE COMPLETE

"Bell Day" in the Downstate Divisions, June 12, 1915

DON'T miss the time of your life. Some people missed the last outing and they have regretted it. Profit by their experience and attend the Big Bell Day Outing for the employees of the New York Telephone Company, to be held under the auspices of the Telephone Club, at Union Hill, Schuetzen Park, West Hoboken, N. J.

"All work and no play makes Jack a dull boy." Some play is essential to good work, if the proportions are properly mixed. The Company encourages the spirit of work and play, especially in the form of athletic games and outings, because these affairs enable the employees of all departments to get together either as participants in the games or as spectators. The result is a better acquaintance and the development of a spirit of good-will between the members of our organization.

Picnickers with baskets full of good things to eat will find ample opportunity to enjoy the excursion. Every man may bring his family prepared to spend the day and evening, to take part in the athletic games, dancing or general amusements, or just to enjoy the concert to be given by fellow employees between dances.

The restaurant on the grounds will be prepared to serve a dinner for 6,000 people. Anything may be obtained from sandwiches to a ten-course dinner.

Schuetzen Park is an ideally located pleasure park. It offers facilities for all outdoor recreations and athletic activities. In the amusement park there are shooting galleries, circle swings, aerial swings, scenic railways, coasters, carousels, side-show attractions, etc. Rowboat and motorboat rides may be had on the lake. In addition to the regular attractions of the park, a special athletic program has been arranged which will be of especial interest to both competitor and spectator. The first event on the athletic program will be called at 2.30 P.M. There will be events in which everyone can take part. A special 75-yard dash and a 600-yard run have been set apart for our novice athletes.

For our coming stars and our hardened champions the following events have been arranged:

75-yard dash—handicap.
440-yard dash—handicap.
880-yard run—handicap.
1-mile run—handicap.
¾-mile walk—handicap.

A medley relay race, interdepartmental, teams of 4 men, one man to run each of the following distances: 220, 440, 660 and 880 yards.

Tug-of-war, interdepartmental, teams of 5 men (to be pulled on dirt without cleats).

A running hop, step and jump.
Putting the 12-pound shot—handicap.
Running high jump—handicap.

Office boys and messenger boys will have their chance to win honors in an 880 yard relay race, interdepartmental, each boy to run 220 yards.

There will also be a variety of novelty events:
Sack race.
Fat man's race, 50 yards (for men over 200 pounds and under 5 feet 10 inches in height).
An aerial relay race, interdepartmental, teams of 4 men, each man to travel hand over hand a distance of 50 feet along a wire cable suspended 8 feet from the ground.
An obstacle race.
A barrel-rolling contest.
A first-aid race, teams of 2 men.
A wheelbarrow race, teams of 2 men (regulation wheelbarrows will be used).
A leap frog (sometimes known as "Parr") relay, 220 yards, teams of 4 men.

Special novelty events will be scheduled for the baseball, basket ball and soccer men by their respective committees.

The Plant men will have their handline contest as usual and in addition several other special games in which they become expert in their daily work. The bowling committee promises to have individual and team bowling tournaments. The golfers will have their inning in a special approaching contest during the games.

Tickets admitting gentleman and lady will be twenty-five cents. They may be secured at any of the division offices from members of the committee, or at the Telephone Club.

Schuetzen Park is conveniently located for everyone. It can be reached in thirty minutes via ferry from New York to either Hoboken or Weehawken, by Hudson Tubes or by trolley direct to Schuetzen Park.

Manhattan Bowling Notes

DURING the month of April the regular tournament bowling continued at the Telephone Club without affecting the relative standing of the teams. At the present time it looks as if Manhattan and Bronx Commercial would win. Frank Reynolds is still high-average man.

On April 7 a five-man team match was bowled against the Western Electric Company. Western was the winner of two out of the three games. The scores were:

	1st	2d	3d
Western Electric Company....	860	984	889
New York Telephone Company	802	882	966

F. Reynolds and Herschenroder of the Telephone team rolled 245 and 204; while Lawrence and Filer of the Western rolled 235 and 203 respectively.

Central Defeats M.-B.

Long Distance Telephone Bowling

On April 30 the Interdivisional bowling match by telephone took place, the down-state teams bowling at the Club. Central Division won the match, beating out Manhattan-Bronx by 22 pins in the three games. The scores follow:

	1st	2d	3d	Total
Central, playing in Syracuse.....	943	989	892	2,824
Manhattan-Bronx, playing in New York	931	959	912	2,802
Western, playing in Buffalo.....	938	873	909	2,720
Hudson, playing in Albany.....	885	845	892	2,622
Long Island, playing with M.-B. at the club	865	813	882	2,561
New Jersey, playing with M.-B. at the club	895	786	689	2,370
Westchester, playing with M.-B. at the club	837	777	730	2,344

Wallace of Central was high man for one game, with a score of 241, while F. Reynolds, M.-B., bowled the fine score of 235. Buchanan, Hudson; Wallace, Central; Carritt, Western; and Asman and F. Reynolds, M.-B., averaged 200 or better for their three games.

The games proved very interesting to the spectators, and the telephone arrangements were better than they were last year, which is saying a great deal. There was no delay in the transmission of the scores. The games were not started until 8.15, but by 10.40 the final scores were posted and the result of the match known.

Central Division Bowling League

THE New York Telephone Company Bowling League of the Central Division has finished another successful season, during which the greatest enthusiasm has been displayed by the members. The results of the season are recorded as follows:

Prize Winners

Season of 1914-1915

Winning Team, Plant No. 1, Captain Sullivan —Won 45, Lost 18 Games. Percentage .714.
High individual single game score—Young. .245
Second high individual single game score—Sullivan..... .243
High individual three game score—Wallace .632
Second high individual three game score—Greer..... .619
High individual average—Wallace..... .189
Second high individual average—Taynton .179
Third high individual average—Cately.... .178
Fourth high individual average—Benjamin .173
Fifth high individual average—Hohl..... .172
High team three game score—Plant No. 3..2724
Low team three game score—Traffic.....1926
Low team single game score—Traffic..... .559

Team Standing End of Season 1914-1915

Team	Games Won	Lost	Percentage
Plant No. 1.....	45	18	.714
Plant No. 3.....	40	23	.635
Plant No. 4.....	36	27	.572
Plant No. 5.....	32	31	.507
Commercial No. 2....	29	34	.460
Plant No. 2.....	28	35	.445
Commercial No. 1....	26	37	.413
Traffic.....	17	46	.270

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NEW YORK TELEPHONE COMPANY

GENERAL OFFICES, 15 DEY ST., NEW YORK

U. N. BETHELL, President
F. H. BETHELL, Vice-President
H. F. THURBER, Vice-President
FORD HUNTINGTON, Vice-President
WALTER BROWN, Secretary & Treasurer
J. A. STEWART, General Manager
C. T. RUSSELL, Counsel
J. L. SWAYZE, General Attorney
J. S. WILEY, General Auditor
E. F. SHERWOOD, Chief Engineer
H. C. CARPENTER, Engineer
T. P. SYLVAN, Asst. to Vice-President
E. A. GURNEE, Asst. Treasurer
WALDRON HOPPINS, Asst. Secretary
J. S. KENNEDY, Secretary, Employees Benefit Fund Committee.

COMMERCIAL DEPT.

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General Com'l Supt.
15 Dey Street

W. F. BAKER
Metropolitan Manager
15 Dey Street

A. D. WELCH
General Com'l Engineer
15 Dey Street

R. S. SCARBURGH
Advertising Manager
15 Dey Street

J. LENIHAN
Collection Attorney
15 Dey Street

PLANT DEPT.

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General Supt. Plant
15 Dey Street

A. W. ALLEN
Supt. Buildings & Supplies
15 Dey Street

J. C. RENNARD
Real Estate Manager
15 Dey Street

W. T. GURNEE
Plant Accountant
15 Dey Street

TRAFFIC DEPT.

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R. H. BOGGS
Traffic Engineer
15 Dey Street

H. G. GREENE
Manager Public Telephones
24 Walker Street

A. D. SCOVEL
Mgr. Traf. Inspection, M-B
58 W. Houston Street

ACCOUNTING DEPT.

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Auditor
15 Dey Street

J. A. KENNEDY
Auditor of Disbursements
15 Dey Street

A. J. NORMAN
Auditor of Receipts
15 Dey Street

C. H. GROVER
Supervisor of Methods
15 Dey Street

Manhattan-Bronx

J. R. POLLOCK
Division Com'l Manager
15 Dey Street

Manhattan-Bronx

BURCH FORAKER
Division Plant Supt.
24 Walker Street

Manhattan-Bronx

H. J. SCHULTZ
Division Supt. Traffic
15 Dey Street

Lower Manhattan

L. F. HALSTED
Division Auditor Receipts
221 E. 37th Street

Westchester

H. L. PALMER
Division Com'l Manager
30 E. First Street
Mt. Vernon

Westchester

BURCH FORAKER
Division Plant Supt.
24 Walker Street
New York

Westchester

M. H. ORTH
Division Supt. Traffic
40 South Fifth Ave.
Mt. Vernon

Westchester & Upper M.-B.

E. A. GIRARD
Division Auditor Receipts
2033 Fifth Avenue
New York

Long Island

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Division Com'l Manager
81 Willoughby Street
Brooklyn

Long Island

P. D. HONEYMAN
Division Plant Supt.
547 Clinton Avenue
Brooklyn

Long Island

G. L. YATES
Division Supt. Traffic
81 Willoughby Street
Brooklyn

Long Island

A. W. DEAS
Division Auditor Receipts
81 Willoughby Street
Brooklyn

New Jersey

H. G. KERR
Division Com'l Manager
281 Washington Street
Newark

New Jersey

I. J. THORP
Division Plant Supt.
281 Washington Street
Newark

New Jersey

G. H. MERRILL
Division Supt. Traffic
281 Washington Street
Newark

New Jersey

C. H. LEONARD
Division Auditor Receipts
281 Washington Street
Newark

Hudson

J. A. JAMISON, Jr.
Division Gen'l Manager
74 Chapel Street
Albany

Hudson

E. H. POWLEY
Division Plant Supt.
74 Chapel Street
Albany

Hudson

E. G. ANDERSON
Division Supt. Traffic
74 Chapel Street
Albany

Hudson

J. P. HILL
Division Auditor Receipts
Telephone Building
Albany

Central

D. C. COX
Division Gen'l Manager
321 Montgomery Street
Syracuse

Central

F. J. CHESTERMAN
Division Plant Supt.
321 Montgomery Street
Syracuse

Central

H. H. KENNEDY
Division Supt. Traffic
321 Montgomery Street
Syracuse

Central

L. A. WILCOX
Division Auditor Receipts
321 Montgomery Street
Syracuse

Western

C. A. SPAULDING
Division Com'l Manager
Telephone Building
Buffalo

Western

P. O. JACOBS
Division Plant Supt.
Telephone Building
Buffalo

Western

J. J. WELCH
Division Supt. Traffic
Telephone Building
Buffalo

Western

H. W. GAUL
Division Auditor Receipts
Telephone Building
Buffalo

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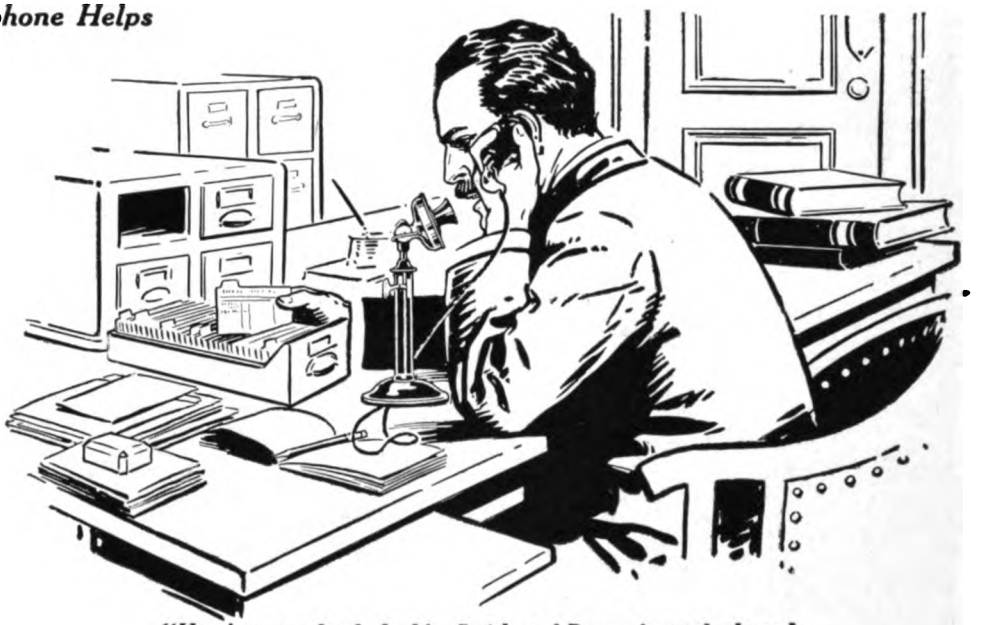
Telephone Helps



"Here's a new lead, Jack! Smith and Brown just telephoned. See them at once. Their last order was February 10th."

Supervising Salesmen —By Telephone

"Our method of supervising salesmen by telephone is one that I believe would produce good results in any business," said the sales manager of a large business concern recently.

"Before leaving the office, each salesman makes out a list of the names and telephone numbers of concerns he intends to call on during the day and leaves this list with our telephone attendant.

"By referring to this list I can get in touch with any of our salesmen very quickly by ***telephone,*** in case anything comes up that requires quick action.

"In addition, each salesman telephones the office twice a day. This gives us a chance to talk over rush orders, give salesmen new 'leads' for business, and, in general, to direct our selling efforts along lines that will bring the best results."

Are you using your telephone to direct *your* selling efforts along lines that will bring the best results?

NEW YORK TELEPHONE COMPANY

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The TELEPHONE REVIEW

July
1915
VOL. 6
NO. 7

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MISS FLORENCE G. CARNCROSS
Manager of Operators' School, Hudson Division

Whose example imparts to her pupils and the entire operating force the true meaning and spirit of character, service, and faithfulness

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The TELEPHONE REVIEW

VOLUME·6· NUMBER·7

NEW YORK
JULY
1915

The TELEPHONE REVIEW
J. D. NEWMAN, Editor.

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VOL. VI. JULY, 1915 No. 7

Work Plus an Ideal

WE take great pleasure in printing on this page a letter received from Mr. John H. Cahill, former Vice-President, General Counsel and Secretary. Upon receipt of the letter we wrote asking if he had any objection to our making this use of it, and Mr. Cahill gave us his permission in another letter, which was so interesting that we are quoting from it the following without having obtained his permission:

My heart is with them [the employees]. I know from long experience how hard they work and the enthusiasm with which they serve the Company. They know that they have a good and generous employer. Its officers are ever engaged in devising ways and means for promoting the best interests of the telephone family. The plan for sick benefits, insurance, and pensions is an admirable one, and does great credit to those who originated it.

In a recent address, President Bethell said that if he were called upon to name this age, he would call it "The Age of Opportunity." Mr. Cahill's letter tells what he made of his opportunities, and a brief biographical sketch will suggest how he did it and prove an inspiration, we are sure, to others who start out with ambition as he did. He attributes his success to work, but we think it was work plus an ideal. Whenever you get discouraged, fellow-workers, read the following sketch of Mr. Cahill.

John H. Cahill

Like many successful men, Mr. Cahill was born in the country. When a young boy he began to dream of the metropolis—not, however, as an end, but as a means to an end. He yearned for travel in foreign lands, for which a competence had to be acquired. Forty years ago he came to New York from his native place in Burlington County, New Jersey, where he was born July 22, 1859. It was no easy task to rise to the position he occupied. He has often said that work did it all. He availed himself of the night school facilities then to be had, studied shorthand, and, at the early age of sixteen, was with the stenographers who were reporting the celebrated Beecher-Tilton trial in Brooklyn. There were no typewriting machines in those days, and reporting was the hardest kind of work. He thought nothing of putting in eighteen hours a day. In 1879 he became a private secretary in the Telephone Company. His ability as a stenographer enabled him to do this. He was soon appointed Acting Secretary and then Secretary. He devoted his spare time to the study of law, and in 1885 he was graduated from the University of the City of New York, receiving the degree of LL.B., and the prize for the best oral examination. He was then made Attorney of the Company and later its Vice-President and General Counsel. Since his retirement he has traveled extensively, not only in Europe

Letter from Mr. Cahill

NEW YORK, June 8, 1915.

To the Editor of THE TELEPHONE REVIEW.

Dear Sir: I am greatly indebted for The Telephone Review. Its pages interest and instruct me more than I can tell. Especially am I pleased when I read of an employee who has been promoted. I do not forget how I used to look forward to promotions myself, and they came frequently—as often as I deserved. Never during my service of thirty-four years did I experience a lack of appreciation of my efforts in the Company's behalf. Beginning as private secretary to its chief officer at a salary which I considered fair, I found myself, before I resigned, in receipt of more than twenty-five times the original amount and in the enjoyment of the highly honorable offices of Vice-President, General Counsel and Secretary, besides being in the directories of that and other companies. Just think of that! Furthermore, what I never expected at all, or even thought of, a pension was awarded me of a greater sum than was the salary of the active head of the Company at the time I entered its service. These facts should encourage the younger members of what your President, Mr. U. N. Bethell, has well described as "a noble family engaged in a noble work." Their opportunities are even better than mine were. Higher salaries are paid now, and there are more lucrative positions per capita to fill. My hearty congratulations are extended to you and all the others fortunate enough to be on the Company's rolls.

Sincerely yours,

(Signed) JOHN H. CAHILL.

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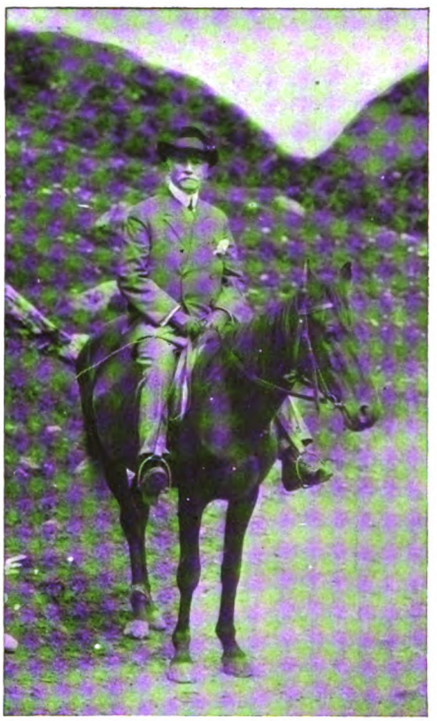

John H. Cahill at the Gap of Dunloe, Ireland

but also in Asia and Africa. Just before the war he journeyed through France, Italy, Egypt, Greece, Turkey, the Balkans, Austria and Germany. He expects to do much more traveling when the war is over, which he hopes will be soon. The photograph shows him in the Gap of Dunloe, Killarney, Ireland.

"So Terribly Natural"

"SUCH tricks hath strong imagination" that even the testimony of the senses sometimes weighs nothing in the forming of an impression. This was illustrated by an incident at the transcontinental telephone demonstration at the Executive Mansion in Albany the other evening, when a lady, turning from the telephone after talking with Governor Whitman's party in San Francisco, exclaimed in amazement, "Why, it was so terribly natural!"

The lady, who is the wife of a member of the Governor's official family, is a constant user of the telephone, and never gives a second thought to the marvelous fact that she can converse at will with those to whom she is accustomed to speak. Moreover, she had been listening for two hours to the transcontinental conversations being carried on from that room; she had witnessed Charles Seymour Whitman, Jr., crying into the transmitter, and had heard Governor Whitman's hearty laugh when he recognized (?) his baby's voice across the continent. Yet in spite of these natural and convincing proofs of the reality of transcontinental voice transmission, she would have left without herself talking, had not friends persuaded her. For so vividly did her imagination play tricks with her senses that she could hardly be convinced that for *her* to talk and hear across a continent was not impossible.

It was somewhat the same psychological situation that made it difficult for several members of the gathering to make themselves understood for the first few sentences of their conversations. They felt the immensity of the miracle being wrought, and they unconsciously tried to help it along by talking in a forced and strained voice, as if trying to make themselves heard. This "blurred" the sounds, and it was only after the speakers had, as it were, become accustomed to the wonder, that they talked naturally and let the wires do their work.

All of us know or have heard of old people who are still unwilling to use the telephone for any purpose, and we smile at their whimsicality, but callous indeed must he be who has lost all sense of awe when using the telephone. The lady's exclamation, "Why, it was so terribly natural!" was a tribute both to her perceptions and to the greatest triumph of science.

Planning and Plodding

IN the conduct of the world's business there are two general classes of work to be done. The more creative, pathfinding type of work may be classified as planning, the execution of this work, plodding. Each class, when at its best, is tinged with an element of the other. There is little work of any sort the execution of which does not require planning; there is none which would not be bettered by it. The more active thinking we put into our work, the better it is done.

Nearly every employee of the Company fills two positions—that of subordinate and that of superior. For his own superior, the work that he does is plodding, though it may well be to himself a stiff exercise in originality and imagination. On the other hand he must do the planning for his own subordinates. When the latter come to follow out these lines, they in turn must add the creative touch which alone can make work most effective. The more planning a man can put into his work, the sooner will his superior know that he is capable of something more than plodding, and work with a wider opportunity—an opportunity for more planning—will be given him. The man who can only plod will be given only plodding. The situation of the "perfect" clerk who was never advanced is explained by the fact that he was capable of being no more than a clerk. A "perfect" clerk who has an eye for larger things, one who can plan as well as plod, will rise to something broader.

"Plod well, but do not plod entirely," is a good motto, for all the creative work the brain of man could evolve would be useless if it were not made a fact by the unswerving, reliable work we call plodding. Milton's "Paradise Lost" existed only for Milton, until it was written down by his daughters, who in this instance were doing the necessary "plodding."

It is well to remember that everyone makes mistakes, therefore the important thing is not to make the same mistake twice. Strike out again, plod with renewed vigor, but plod with a strong plan as motive force. The combination makes a strong team. It is this combination that has built up the Bell System and all the other great enterprises of our time; it is this combination that is doing the work of the world.

Rate Reduction July 1

In Greater New York

A GENERAL reduction in telephone rates in Greater New York goes into effect July 1, and an individual notice has been sent by the Company to each subscriber in the territory affected announcing the change, which was made in accordance with an order of the Public Service Commission.

Rate reductions by the Company in all parts of its territory have been so common in the past that the effect in this case differs very little from any other, except in the amount involved and the extent of the area covered.

With the reduction in the rates to subscribers they will be able to obtain more service for less cost, and it is now possible for many who have felt they could not afford a telephone to obtain service at a price well within their means. It has often been demonstrated that it was cheaper to telephone than write a letter, and now the cost is much less.

The labor and expense involved in this rate reduction have been enormous, in addition to the loss of revenue which will follow, but the Company has an abiding confidence that the public which it serves recognizes and will respond to its unfaltering purpose to maintain and strengthen the cordial and reciprocal relations which have made possible the success of the Company and the satisfaction of its patrons.

Charles Seymour Whitman, Jr., the Governor's baby, cried so loudly in the Executive Mansion tonight, that his father, who is in San Francisco, heard him.—*Albany Item.*

We trust that Dr. Alexander Graham Bell realizes what he has done.—*Puck.*

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The Bell Telephone Exhibit at the Panama-Pacific Exposition

50,000 Visitors Attend Transcontinental Telephone Demonstrations

WARMTH and harmony of color, concord with the surroundings so peculiarly adapted to the task they are performing this summer, beauty of tone, wealth of strong yet restrained colorful appeal—this has been made one of the features of the Panama-Pacific Exposition. How successfully the purpose has been achieved, the panoramic view of the Fair demonstrates most convincingly. The color effects were put in charge of Jules Guerin as Director of Color, and the result of his work will be remembered as one of the most notable as well as most beautiful characteristics of this Exposition. With the sparkling blue of the Pacific on one side, the soft green hills across the bay, and the greener hills near by sloping down to form a great semicircular plain along the water's edge, the warm, iridescent coloring of the Exposition looks like a delicate, glowing jewel in the magic setting of sun-bathed blue and green.

PALACE OF LIBERAL ARTS
Building in which the A. T. & T. Co. Exhibit Is Located

Style and Decoration of Telephone Building

The exhibit building of the Bell System, designed by William Welles Bosworth, carries out the color motif of the Exposition. The Bell Exhibit is in the Liberal Arts Building, and is a sort of pavilion, like an old Italian villa, with a concave loggia or colonnade. The style is reminiscent of the work of Vignola, the famous Italian architect of the sixteenth century; in fact the portico in the grand court of the villa Papa Giulio, designed by Vignola, seems to be the prototype of the Bell Exhibit Building. It is as if the telephone would do its best to make up to those olden days for the dearth of conveniences they suffered, by choosing a building of medieval Italian design and classic interior finish for the exhibit of the master-convenience of the twentieth century.

The walls of the building are soft gray and across the front, supported by the columns of the loggia, is a great map of the United States done in soft, warm colors and showing by means of an electrically controlled commutator and miniature electriclamps the transcontinental line and the main trunk circuits of the Bell System. Different soft-hued lights represent the large cities, and the variations in shade and brilliancy make the map another harmonious expression of the color-theme of the Exposition. The impression is still further enhanced by the effective tones of the wainscot and floors of the loggia and the terrace, by the bay trees in front of the columns, and the verde antique bronze flag pole standards which support bright colored flags clustered in graceful folds in front of the pylons.

Entrance to the A. T. & T. Co. Exhibit

The Interior of the Bell Exhibit Building

Within the Building is the auditorium with a seating capacity of over two hundred, and an ample stage, with curtains of cream color and gold. Over the moving picture screen at the back of the stage is a niche containing a replica of the first telephone, which is illuminated, at the proper time, by a strong shaft of light revealing the details of this precursor of the nine million telephones of the Bell System. When not in use, the screen is pushed back to disclose a beautifully colored, hand-painted map of the United States with lines of

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light representing the principal trunk line circuits of the Bell System.

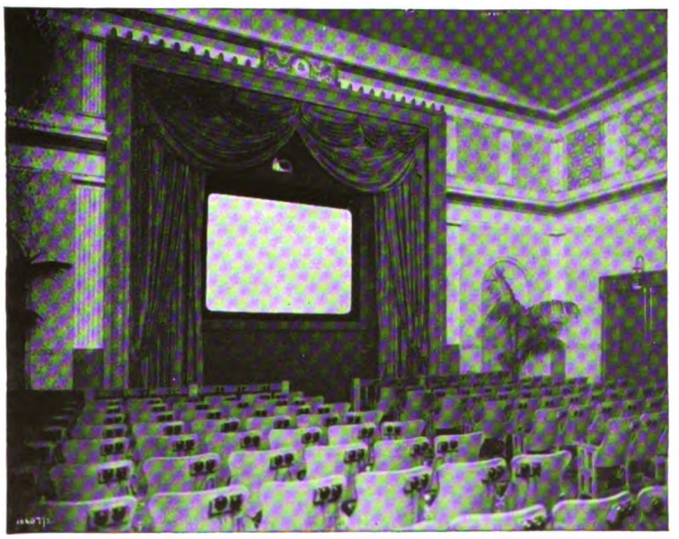
The dominant note in the decoration of the interior is Pompeian. With its rather severe detail, somewhat Greek in character, the effect is suggestive of Alma-Tadema's water-colors of the house of Coriolanus, with its blue ceiling, painted stars, and painted windows on the walls. The walls are of moonlight gray and the columns of Pompeian red below the dado. Delicate stencils in lotus-leaf patterns of blue, green and red decorate the frieze, and at the dado is another simple stencil, harmonizing with the Pompeian red of the columns. In niches on either side of the proscenium arch the green tracery of graceful palms relieves the gray tone of the walls, while over the whole a system of soft indirect lighting floods the room with a gentle glow.

So completely in harmony with the rest of the Exposition in its particularly effective appeal to the eye, the Telephone exhibit, nevertheless, makes its strongest appeal, as is fitting, through the sense of hearing. The charm of color, the artistic contrasts, and the delicate beauty of the building both outside and within, are incidental and tributary to the purpose of the exhibit, which is to appeal to the mind through the ear rather than the eye.

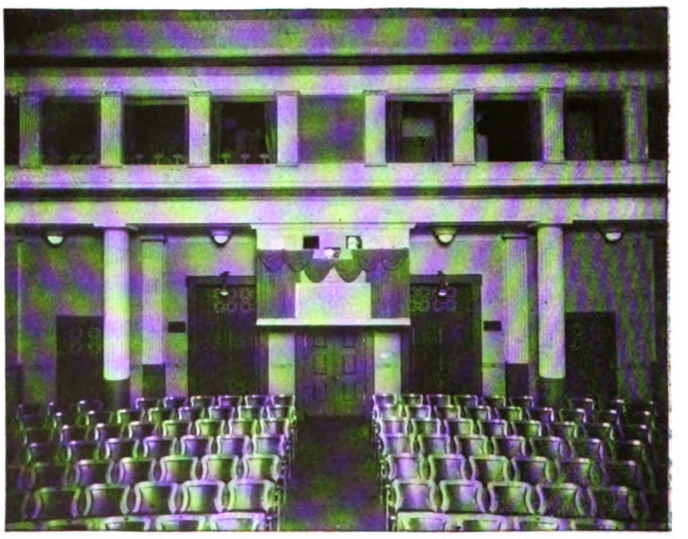
Audience in A. T. and T. Co. Auditorium Listening to Demonstrations of Transcontinental Telephony

The Transcontinental Demonstration

Each of the chairs in the auditorium is fitted with two watchcase telephone receivers which are connected to the transcontinental line, and here, every day except Sunday, visitors to the Exposition sit comfortably and hear the human voice traverse a continent. The demonstrations of transcontinental telephony are given hourly, beginning at 11 A.M., and form part of a comprehensive program. A lecture is given on the growth and development of the telephone business; a graphic story of the birth of the telephone is told by a talking moving picture in which Mr. Thomas A. Watson is the central figure; and a series of dissolving and moving pictures present a vivid idea of the construction of the transcontinental line and show portraits of the leaders in telephone achievement. The illuminated replica of the first telephone and these graphic presentations of the early history of the telephone and its latest attainment build up a well-rounded conception of what has made telephone service possible and what is making it increasingly efficient. The climax of the program is reached when the news of the day, as found in the daily papers, is told from New York and heard, as if from the next room, by every person in the auditorium. Popular music is wafted over the line from the Atlantic to the Pacific, making a variety in the program and giving an added proof of the wonders of long-distance telephone possibilities. Another very popular feature is the roar of the Atlantic Ocean which is transmitted by telephone from Far Rockaway Beach. Pictures taken at Far Rockaway, where the surf booms continually, are shown in this connection. The transmitting station for the transcontinental demonstration is in the Walker-Lispenard Building in New York City, where the equipment is located for transmitting the news and music. To provide for any possible emergency, duplicate equipments are installed in Chicago and Denver.



View of Stage and Moving Picture Screen



View of Balcony and Rear of Auditorium

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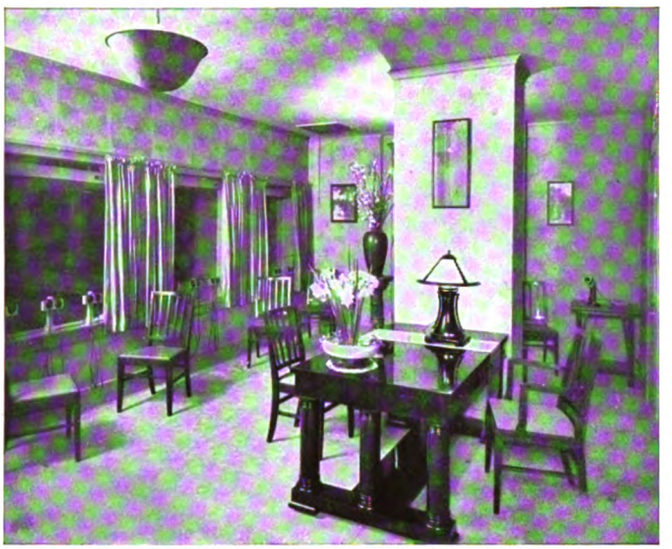
The Equipment

The equipment used for the demonstrations and lectures in the Bell Exhibit Building includes a special No. 4 test board in which terminate the long distance trunk circuits and the local telephone circuits within the building, 356 receivers being required for the auditorium chairs; an Edison moving picture machine, installed in a booth in the mezzanine, and a dissolving stereopticon, also in the moving-picture booth. A small storage battery plant charged by a mercury arc rectifier completes the electrical equipment. In the balcony is the Manager's room, where plate glass windows open on to the auditorium, and additional watchcase receivers are connected for the use of the specially invited guests and visiting representatives of the telephone companies, for whom the room is reserved. The indispensable public telephone completes the telephone equipment of the exhibit building, two automatic pay stations being installed for the general public, on the ground floor.

Enthusiasm of the Audiences

Over fifty thousand people have already heard these lectures, and the marvel of the transcontinental demonstrations has sent them away with words of wonderment on their lips. In the opinion of many, as repeatedly expressed, the Bell System has "the best exhibit in the Exposition." No more convincing proof of the general interest in the exhibit is needed than the fact that both the auditorium and reception room have frequently been filled to capacity, and scores of times people have been unable to gain admission to the afternoon demonstrations. On several occasions, the auditorium has been filled almost exclusively with school children. Indeed a well-defined plan is apparent, on the part of the school teachers, to have the children visit the telephone exhibit of the Exposition before the schools are closed for the summer. The Bell exhibit is recognized as an educational opportunity for these citizens of the future. They will know telephony in an even higher state of perfection and usefulness than we know it to-day, but for them, as for those who are citizens to-day, the principle of the laboratory is the most impressive, the most effective teacher. To know that words spoken three thousand four hundred miles away can be heard, and at the instant they are uttered, is to be cognizant of one of the greatest scientific achievements of all time, but actually to hear that wonder take place with one's own ears is to change interest to enthusiasm, to turn knowledge to action, to make the telephone a vital fact in everyday experience.



Manager's Room in Balcony, with Windows Overlooking Auditorium

The Grand Prize

The Superior Jury of Awards of the Panama-Pacific International Exposition has recently completed its work and has awarded to the American Telephone and Telegraph Company the Grand Prize of Electrical Methods of Communication. The basis of the award is "The American Telephone and Telegraph Company's daily program of transcontinental telephony with moving pictures of its construction and operation. This exhibit is of the greatest value as an exposition attraction and represents one of the greatest achievements of the past decade."

Stevens Institute Honors J. J. Carty with Degree of Doctor of Engineering

AT the forty-third commencement of the Stevens Institute of Technology, held in the auditorium of the Institute at Hoboken on June 8, the degree of Doctor of Engineering was conferred upon Mr. J. J. Carty, chief engineer of the American Telephone and Telegraph Company.

Dr. Alexander C. Humphreys, the president of Stevens Institute, in conferring the degree, delivered the following address:

"John Joseph Carty

"Engineer, scientist, inventor, administrator; member of many societies for the advancement of science and education; past-president of the New York Electric Society; president-elect of the Institute of Electrical Engineers.

"As a boy entering the service of the Bell Telephone Company of Boston, he has been continuously a worker in the field of telephony, rising step by step until to-day he is the chief engineer of the parent company in the United States, the American Telephone and Telegraph Company.

"He has done probably more than any other one man to make the telephone, as it is to-day, the ready and efficient servant of mankind. In answer to his persistent efforts the Atlantic and Pacific coasts have recently been linked together.

"His services to the world have been officially recognized by the award of the Longstreth Medal of the Franklin Institute and by the decorations of the Order of the Rising Sun and the Order of the Sacred Treasure of Japan.

"In recognition of his services as engineer, scientist, inventor and administrator, and as a man who has persistently employed his scientific imagination for the benefit of his fellows, the Stevens Institute of Technology desires to confer upon him the degree of Doctor of Engineering, *honoris causa*.

"John Joseph Carty,

"By virtue of the authority vested by the State of New Jersey in the trustees of the Stevens Institute of Technology, I confer upon you the degree of Doctor of Engineering."

(Diploma Presented.)

"This diploma, signed by the president, the secretary and the registrar of the Faculty, and by the president of the Board of Trustees, and bearing the seal of the Stevens Institute of Technology, will certify that this degree has been conferred upon you."

This recognition of Mr. Carty's engineering achievements gives a special pleasure to the many graduates of Stevens Institute who are employed by the telephone company, and is no less a source of gratification to the rest of us. It is another mark of the close bonds of sympathy and appreciation which exist between the leaders in technical instruction and those who lead in directing the practical application of engineering principles.

Mr. Vail was among those present to witness the conferring of the honor on Mr. Carty.

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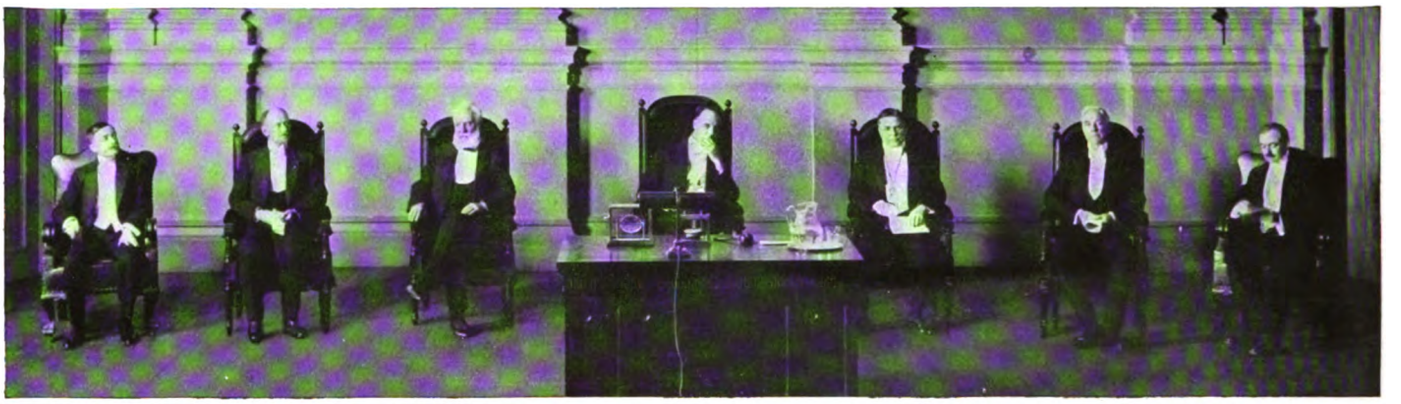

Mr. CARTY Mr. BETHELL Dr. BELL Dr. LINCOLN Dr. WHEELER Mr. WATSON Mr. HUTCHINSON

Edison Medal to Doctor Bell

ON May 18, 1915, the Edison Medal was presented to Dr. Alexander Graham Bell at the Annual Meeting of the American Institute of Electrical Engineers; the presentation speech was made by Mr. J. J. Carty, the president-elect of the Institute, of which Dr. Bell is a past-president; an address, entitled "How Bell Invented the Telephone," was delivered by Mr. Thomas A. Watson; and the announcement was made that Mr. Watson had been elected a Fellow of the American Institute of Electrical Engineers.

The mention of these features of the evening's program gives but a cold and scant idea of the impressive and thrilling scenes that were enacted before an audience which packed the auditorium of the Engineering Society's Building on this occasion, and it would be impossible to put into any account of this meeting an idea of the impression which the proceedings left upon those present.

With fitting deliberation the business of the evening was transacted and the officers of the Institute made their formal reports, and as each order was disposed of, the tense and expectant attitude of the audience merged itself completely into accord with the distinguished gathering of scientists on the platform and the momentous events transpiring.

Mr. Carty said that he was profoundly grateful for the great honor which the Society had conferred upon him by electing him "to the greatest office in the gift of electrical engineers anywhere in the world." He paid a high tribute to "the distinguished incumbent of the office to-day, President Lincoln," and expressed his appreciation of the "very great compliment" paid to him "and to all telephone men everywhere" in being called upon to make the presentation of the Edison Medal to Dr. Bell.

Dr. Schuyler Skaats Wheeler, Chairman of the Edison Medal Committee, in a most graceful and impressive address told of the origin of the Edison Medal and the significance of its award. In making the presentation to Dr. Bell, Mr. Carty said:

> Of all the men who have ever lived, it remained for you, Alexander Graham Bell, to found the art of transmitting speech electrically. You revealed to mankind the method of electrically transmitting the tones of the human voice to distant places. You were the first to provide the apparatus to do this marvel. You were the first to speak through the electric speaking telephone, and your voice was the first to be heard in the telephone receiver. As long as men can speak, your name will be spoken with honor and with praise, and as long as men can hear they will listen with admiration and with gratitude to the story of your immortal achievement.
>
> In recognition of your priceless service to electrical engineering, the American Institute of Electrical Engineers many years ago conferred upon you the honor of its highest office by electing you to be its President, the most distinguished position in the gift of electrical engineers.
>
> And now, once more, the time has come when the American Institute of Electrical Engineers takes action in commemoration of your invention of the electric speaking telephone.
>
> To carry out the terms of the Deed of Gift creating the Medal founded in commemoration of Thomas Alva Edison, there was established a Committee of twenty-four members of the American Institute of Electrical Engineers, to select each year a person high in attainments in electrical engineering, electrical science or the electrical arts, upon whom the Edison Medal should be conferred.
>
> It was the unanimous conclusion of this distinguished Committee of the greatest electrical engineering society, that the Edison Medal should be conferred upon you because you invented the electric speaking telephone.
>
> Pursuant to this decision, and acting for the President of the American Institute of Electrical Engineers, I now present the Edison Medal to you, Dr. Alexander Graham Bell, the inventor of the telephone.

The ovation which Dr. Bell received upon arising to accept the Medal lasted several minutes, the entire audience, led by Mr. Bethell, rising to their feet, cheering and applauding.

Dr. Bell's speech had a climactic effect, and was the culmination of one of the most wonderful experiences which anyone in the audience could ever have had. It would not do to attempt a report of it, for without the atmosphere of circumstance, time, and place, the best part of it would be lacking. The effect was indescribable. Because of its historic interest, we print Dr. Bell's speech on the following page.

Mr. Watson's address preceded the presentation of the Edison Medal to Dr. Bell, and as he traversed the early days of his association with the honored guest of the evening, both responded to the flood of recollections which must have been loosened in their minds, and this was not lost upon the audience. Mr. Watson's address was a masterly treatment of his subject, delivered in his masterly manner.

Mr. Vail Receives LL.D. From Princeton

THE honorary degree of LL.D. was conferred upon Mr. Theo. N. Vail by both Princeton and Harvard Universities at their Commencement exercises this June.

Honors are coming thick and fast to telephone men this year. With wars raging all around us and rumors of war frightening the very air we breathe, the arts of peace are not neglected among us, but are winning victories more enduring than any gained in fratricidal strife.

It has been said that the telephone more than anything else has united Americans. Everything can be talked about between two persons or more throughout this broad land of ours—all distance penetrated by the speaking voice and listening ear—as if face to face. The result is complete understanding and sympathy, and consequently a united nation.

What a blessing it would have been to the world if Mr. Vail and Mr. Carty could have taken Dr. Bell's invention and tied up Europe with a System like ours before the war came, and made a neighborhood of a continent as they have made a neighborhood of a nation here.

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Dr. Alexander Graham Bell's Speech

Accepting the Edison Medal, Presented by the American Institute of Electrical Engineers, May 18, 1915

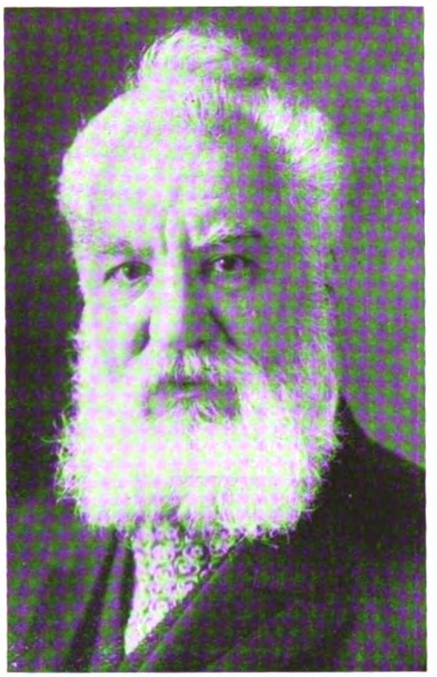
Ladies and Gentlemen.

I AM really quite overpowered by this magnificent ovation. I am proud to receive a medal that bears the name of one of the most distinguished men in the world. I am proud to receive this medal through the medium of the American Institute of Electrical Engineers. I am proud of having been a past-President of this organization, and I am proud of the president that you have now elected.

It is a little difficult to know what to say—perhaps some of you can prompt me—but it is really a very touching thing to me to hear the words of my old associate of the past, and have him bring to my mind the early recollections of the first days of the telephone; and it is touching to see that [holding up in his hand the replica of the first telephone], a duplicate of the first speaking telephone we made and through which I could never hear. Mr. Watson would come rushing into my room and say, "Mr. Bell, I heard your voice, and I could almost understand every word you said." But I never could hear his voice. I could hear some sounds occasionally that satisfied my mind that the thing was there, but it was not till long after the making of that first instrument that I got the thrill, not of hearing anything especially, but when I said, "Mr. Watson, come, I want you," and he came, I felt the thing was solved, and by that time Mr. Watson himself had begun to speak a little more hopefully. I had become a little better able to hear in the noisy surroundings of the busy workshop, and I began also to hear what the telephone spoke.

I tried this same instrument when I was in New York at the opening of the trans-continental line, with Mr. Watson at the other end, and I tried over it the same original message that I gave to him in 1876. He was in San Francisco and I was in New York. I said, "Mr. Watson, come here, I want you." He replied, "It would take a week to get there."

Now, when I contrast those early days with the great occasion of talking across the continent, from the Atlantic to the Pacific, I realize how much other men have contributed to this great work of the telephone. In fact, it is so long since I have had anything to do with the telephone that it requires such an occasion as this and the presence of this instrument, and the presence of our good friend Mr. Watson, to make me realize that I really am the man concerned. But when it comes to talking from New York to San Francisco, and I think of the great successes we had in talking through half a mile of wire in those old days, I realize how much other men have done in the development of the telephone, especially Mr. Carty and his associates. In fact, you have here the past of the telephone and here the present. I was almost going to say the Alpha and Omega, but that will not do. Far from it, there is a great deal more to be done. We have here the past and the present, and you, the American Institute of Electrical Engineers, represent the future.



DR. ALEXANDER GRAHAM BELL

Have you done yet? Are you going to make any new advances in electricity? You have electric light, electric heat, electric power, electric speech, or rather hearing by electricity. Are you going on to do anything more? Are you going to see by electricity? I can imagine men with coils of wire around their heads connected together in one circuit communicating thought by induction. However, that is for you to do in the future.

But, speaking seriously, has the end of all things come, and is there really no great field for you? Now, I am struck by this fact, that nearly all the recent developments in electricity have had to do with vibrations. Starting out with the vibrations of sound in an electrical current, we have reached the height of vibrations in the luminiferous ether of space in wireless telegraphy, tuned to reeds that do not correspond to anything we hear.

Now, all our knowledge of the external universe is gained through our sensations, our sensations taking cognizance only of vibrations. Now that we know so much about heat and light and sound and other things, we can put to ourselves a hypothetical case. Suppose you had a rod, clamped at one end, and free to vibrate at the other. Now, pluck this rod and it vibrates. Now, endow it with the property of vibrating continuously, faster and faster, and observe its vibrations in a dark, quiet room. We pluck this rod—you see nothing, you hear nothing, but put your hand upon it and you will feel it move. It appeals to one sense, the sense of touch. Now, let this rod go on vibrating faster and faster, and presently it appeals to two senses, you can feel it tremble, and, what is that, a sound? You begin to hear low musical sounds, emitted by the vibration when it is about thirty-two per second. Let it go on vibrating. It appeals now to two senses, the sense of touch and the sense of hearing. As the vibrations increase in frequency, it appeals more and more to the sense of hearing and less and less to the sense of touch, what we call the pitch of the sound rises and gradually you get a higher and higher and higher pitch, until you get a regular shriek; let it go on still, and when it gets to 32,000 vibrations per second, you have a very loud, shrill tone, and then all of a sudden, at 35,000 or 40,000 vibrations per second, while the rod is going on vibrating, we have no sense that can perceive the effect—feel it, and it is still, and we no longer feel the tremble; and no human ear can hear a sound at 40,000 vibrations.

Let it go on vibrating, 50,000, 60,000, 100,000, and we have no sense that can take cognizance of these vibrations. At 200,000, 300,000, 500,000 vibrations, still nothing. Well, when we get up to 1,000,000 vibrations per second, then we begin to perceive an effect, not with the sense of touch, not with the sense of hearing, but with the sense of temperature, radiant heat begins to be evolved, you have a sense of temperature. As the vibration goes on faster and faster, you have a heating effect, and radiant heat is more and more perceived by the sense of

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temperature, and then when you get up to something like 1,500,000 vibrations per second, the sense of sight is affected, red light is produced, in other words, the rod becomes red hot. It again appeals to two senses, one the sense of temperature and the other the sense of sight—it is red hot. Now, let it go on vibrating, 1,500,000 vibrations, 2,000,000 vibrations, and the color of the light changes, it goes through all the colors of the spectrum, and the perception of radiant heat diminishes, the luminous perception increases, and the thermal impression diminishes, and so you go through all the colors of the spectrum until you get up to the violet, something like 3,000,000 vibrations per second, and you perceive violet light.

Go a little higher, and again we have no sense to take cognizance of the vibrations, nothing can be seen, nothing can be felt, nothing can be heard, no temperature effect, and yet put a photographic plate near the rod, and you have actinic rays, ultra-violet rays, that will affect the photographic plate.

How much further up we might have vibrations I do not know, but now the thought that comes to me is this—in that great gap between the highest pitch of sound and the lowest pitch of radiant heat, a gap much greater than the whole of the rest of our sensations put together, we have no sensation, and all of our knowledge of the external universe is derived from our sensations which recognize vibrations. Nearly everything comes through the sense of sight. Just think of all the things you have ever seen, all derived through one octave of vibration, and of this vast gap that exists between the highest pitch of sound and the lowest pitch of radiant heat, we have no sense that can take cognizance of it, and yet these vibrations exist in nature.

But now we are beginning to discover that that term "electricity" comes in that gap. In the signals of wireless telegraphy, we are tuned to a pitch that lies in that gap. Why, then, are we not making instruments for our senses to use, new senses, and when you come to think of the great gap in nature, is there not a field for you in investigating that electrical gap? If we have derived so much knowledge of the external universe through one octave of vibrations that reach the sense of sight, may we not hope for an enormous increase of knowledge concerning the universe when we have means of determining the vibrations that reach us from between these points?

I had no idea where I would begin, or where I would end up here. I wish to thank you very much for this meeting, and I express my highest appreciation of this Medal, and I wish to express my high appreciation of you all.

Here and There

A Bit of Brain Is Best

THERE are two or more kinds of accident prevention: one that applies to life and limb, and at least one other kind that applies to the job. Mr. H. H. Griswold, Syracuse, sends us the following clipping from the *Christian Endeavor World*, which points out how most accidents could be avoided—*i.e.*, by the use of brains:

Digging a Post Hole

He Worked Faithfully and Cheerfully but Lacked One Essential

He was a vigorous worker, and he was digging a post hole in the bed of a river. A post was to be placed in it as part of the extension of a wharf.

He worked hard and got rapidly deeper and deeper.

He struck stones, but he reached down and pried them up.

He got thoroughly soaked, but he grinned cheerfully.

He sang at his task and was an inspiration to all the other workmen.

Five o'clock came, but he faithfully finished his post hole, though it took him ten minutes longer. He was no time server.

Then he climbed, dripping, out on the bank and walked home, happy in the consciousness of good work accomplished.

But he did not put a post into the post hole, and when he came back the next morning he found the hole filled again with mud and completely obliterated.

However, he cheerfully went to work again, singing as he labored, and dug the hole once more.

And the company paid the bill.

Moral: Cheerfulness is good, zeal is better, but a bit of brain is best of all.

City Island Telephone Heroine

"ALERT Telephone Girl Saves Entire Family by Quick Work" proclaims the Bronx *Home News* with amply justified pride in the young heroine of the Bronx. The story tells of the presence of mind of Miss Marion A. Hearle, night operator at City Island, who saved the lives of Otto Feister, his wife, their seventeen-year-old daughter and twenty-year-old son, by warning them of a fire in the building where they slept. Miss Hearle was the only operator in the exchange and was "vigilantly watching and wide awake at her switchboard" at one o'clock in the morning when she discovered flames shooting out of the Harlem Yacht Club on Pelham Bay. With the characteristic Bell cool-headedness and prompt action, she rang on the line of the Yacht Club and at the same time notified the Fire Department. The vigorous ringing of the telephone bell wakened the steward of the club and his family. It was not a minute too soon, for ten minutes after they had escaped "all the fire engines in the city could not have saved the clubhouse."

No Job for Veteran Postman

Business Men Plead for Scannell, Forty-five Years in Service

JULIUS KAYSER, president of Julius Kayser & Co., of No. 45 East Seventeenth street, and other proprietors of places of business in the Madison Square post-office district have addressed a petition to President Wilson in behalf of Mail Carrier Francis Scannell, who has been requested to resign from the service because of illness. Mr. Scannell has been a postman in the Government's employ for forty-five years.

The petition is signed by business men along the route which Scannell covered for so many years. It points to the many years of Scannell's service, to the fact that he served in the Civil War and to the "seeming injustice of the present rules governing the employment of this body of faithful servants, which exact from them a lifetime of service only to cast them out in their old age."

President Wilson is urged by these petitioners to rescind the rule stipulating that employees who are absent through illness for 150 days must resign, and he is asked to urge in his next message to Congress the need of retiring letter carriers on pensions after some definite period of service.

Patrick J. McNabb, chairman of the organization committee of the New York Letter Carriers' Association, said yesterday that Scannell's case had made the carriers see a dark outlook ahead of them and had caused them to doubt George B. McGinty, Secretary of the Interstate Commerce Commission, who said the other day that "Uncle Sam is not only the largest but in many respects the best employer of certain kinds of labor in this country."—*New York Sun, June* 22, 1915.

Shies His Castor

AN entirely self-made poet of the A. T. & T. Commercial Department ground out the subjoined verses in lulls between demonstrations of transcontinental service. This same poet desires to announce that his hat is in the ring.

H. CLINTON SMITH,
Commercial Dept. A. T. & T. Co.

"Count that day lost,"
When no Transcontinental
Demonstration floods the wires
With wingèd words
Of greeting and good cheer
From coast to coast.

Nor count the cost
In messages delayed, or
Lost for aye. 'Tis seeding time—
Anon, the harvest.
A trail is being blazed
Both broad and well.

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New Jersey Demonstrations

THE New Jersey Assembly Room in the Capitol at Trenton was the scene of the eastern end of the demonstration of transcontinental telephone service which marked the celebration of New Jersey Day at the Exposition. Governor Fielder was at the New Jersey Building at the Fair, and Acting Governor Edge conducted the meeting of over 400 men and women of New Jersey gathered to hear their Governor's voice across a continent.

Govenor Fielder, in San Francisco, Talking to Friends in Trenton

Abundance of clever repartee passed back and forth between Governor Fielder and Acting Governor Edge, and a number of prominent politicians of the State who took part in the transcontinental exchange of greetings. After the formal conversations had come to an end, and before the informal talks took place, appreciation of the telephone service was voiced in the following resolution adopted by the members of the Senate and the General Assembly who were at the demonstration:

WHEREAS, The Delaware & Atlantic Telegraph & Telephone Company, the New York Telephone Company, and the American Telephone and Telegraph Company have this twenty-fifth day of May placed at the disposal of the State of New Jersey their trunk line, known as the Transcontinental Telephone Service, to connect the State Capitol at Trenton, New Jersey, with the New Jersey State Building on the Exposition Grounds at San Francisco, California; and

WHEREAS, The members of the New Jersey State Senate, the House of Assembly, the various department heads assembled in the Assembly Chamber, have by this courtesy been entertained by listening to the voice of our executive and members of his official staff at the New Jersey State Building at San Francisco:

Resolved, It is the desire of this body assembled this day to extend the thanks of the members of the New Jersey State Senate and House of Assembly to The Delaware & Atlantic Telegraph & Telephone Company, the New York Telephone Company, and the American Telephone & Telegraph Company for this entertaining demonstration.

(Signed) WALTER E. EDGE, *Acting Governor.*
(Signed) CARLTON GODFREY,
Speaker of the House.

Attest:
(Signed) G. EDWARD HERRMANN,
Secretary to the Governor.

Governor Fielder and His Party Talk with Friends in Jersey City

THE Transcontinental circuit was set up on Wednesday afternoon, May 26, in the office of the Commercial Department of the New York Telephone Company in the Telephone Building at 8 Erie Street, Jersey City, to afford an opportunity for Governor Fielder and his party to talk from San Francisco to his relatives and friends in Jersey City; the San Francisco end of the circuit was extended for that day into the New Jersey State Building for the convenience of Governor Fielder and his party.

The Jersey City party included Mrs. Geo. B. Fielder, mother of the Governor, and Geo. Fielder, his brother, as well as many prominent business men of Jersey City, among them Mr. Walter P. Gardner, vice-president of the New Jersey Title Guarantee and Trust Company, who was appointed one of the New Jersey Commissioners to the Fair but was prevented by illness from attending. A number of the men were accompanied by their wives, while several children completed the party at Jersey City.

For nearly an hour the members of the two parties conversed with each other inquiring as to the welfare of the various members and exchanging the questions and replies to be expected from a large family gathering. The demonstration was unique in the personal note that prevailed throughout as compared with the usual more formal demonstrations.

All of those who took part in the demonstration at the Jersey City end expressed a most lively interest in the opportunity to talk across the continent and referred repeatedly to the pleasure afforded them in being able to talk to their friends and relatives in San Francisco.

The Governor's mother particularly expressed her interest in the whole matter and the pleasure afforded her in being able to speak to the Governor and hear his voice.

Just before closing the circuit, Mr. Peck, speaking from San Francisco, said that the Governor and Mrs. Fielder and all the members of the San Francisco party were immensely pleased over the whole affair.

The *Jersey Journal* comments thus, in part, upon the event:

"Now, I want to make a little speech to all my friends," said Governor Fielder, and all pressed the little round receivers closer to their ears. He was awfully glad to have that little intimate chat with his neighbors, said the Governor. They were having a delightful time out at the fair, and he was sorry that they were not all there to help him and the rest enjoy it.

Then followed a series of conversations between husbands and wives, fathers and mothers and sons and daughters, until most everybody had talked to most everybody else, and that occupied pretty close to an hour and a half.

It was wonderful, they all said, to talk so intimately across the continent. The voice transmission was invariably clear and distinct, so much so, in fact, that at times vocal characteristics were plainly distinguishable.

The Inspector

The inspector's life is one of ease (?).
He crawls in coal bins on his knees,
He tries the ladies all to please—
But doesn't!

When a protector made by "Cook"
He spies afar, he takes a look,
And what he says would fill a book—
But doesn't!

He's looked on as a burglar bold
Who'd murder a woman for her gold.
He might commit dread crimes untold—
But doesn't!

"May I inspect your wiring, please?"
He says—the words float on the breeze.
He thinks he hears them in the trees—
But doesn't!

Some ladies peep out from the door
To say, "Oh, please don't track my floor!"
Of course he should heed their implore—
But doesn't!

If jars of fruit, perchance, he breaks,
Or puts a foot on layer cakes,
He tries to cover his mistakes—
But doesn't!

When at the last he says "Farewell,"
And has no more on earth to tell,
Though people hope he goes to—Well,
He doesn't!

D. L. CARTHELL, *Inspector,*
Otsego and Delaware Telephone Company, Oneonta, N. Y.

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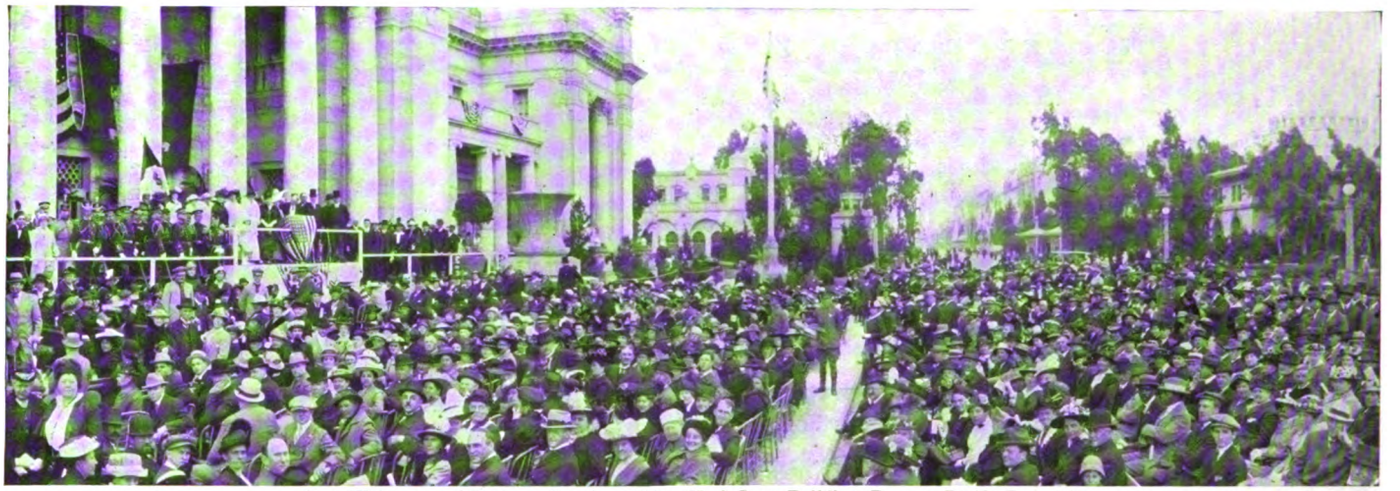

Gov. Whitman and Party at Opening of New York State Building, Panama-Pacific Exposition

Albany and San Francisco Chat Together

JUNE 4 was quite a telephone day in Albany.

Nearly 100 members of the official family of Governor Whitman, some of whom were accompanied by their wives, and also representatives of the local newspapers and the National Press Associations, gathered in the Executive Mansion to talk to Governor Whitman and his party in San Francisco. June 4 was New York Day at the Panama-Pacific Exposition, and the suggestion that the long distance telephone be utilized, so that the stay-at-homes could also take part in the celebration, met with a ready and gracious acceptance.

Everything was in readiness at eight o'clock that evening, and for upwards of two hours the line was busy, as, one after another, the guests desired to talk and often wanted to come back to chat again, just like children riding on a merry-go-round.

The purely informal character of the party in Albany and the close relation of almost every one present with the Governor and the members of his party in San Francisco, made the occasion the most interesting and enjoyable function that has ever been given in the Executive Mansion, according to the statements of many who have been guests there for many years. While it was purely a demonstration of the long distance telephone line as a part of the New York Day Celebration in San Francisco, a great many other demonstrations were afforded which applied to everyday use. The one which the newspapers hit upon immediately and featured in all their accounts was that the voice of a baby three months old was heard distinctly by his father 3,400 miles away. Mrs. Whitman, who was with the Governor, first talked with the baby's nurse in Albany, and it is probable that they talked of those intimate, private matters which only a mother and nurse could discuss about a baby, but no one knows, for no one listened in. When later in the evening the baby himself was brought down, however, every one present glued a telephone to his ear and enjoyed the Governor's vigorous and hearty laugh as he heard Charles Junior's voice. There is a story in all this, if some one would only write it. The only difference which distance made was in the time when the parents would fondle their baby again, but as for learning of its welfare and hearing it cry, they could do that as well by telephone from San Francisco as if they had been home. If they didn't want to hear it cry, they didn't have to. But that is still another story.

Among those present in Albany were Lieutenant-Governor Edward Schoeneck; Deputy Conservation Commissioner Macdonald; William A. Orr, Military and Private Secretary to Governor Whitman; Frank M. Williams, State Engineer; Edwin Duffy, State Highway Commissioner; Col. E. V. Howard, Acting Adjutant-General; Mayor Joseph W. Stevens of Albany; Dr. John H. Finley, State Commissioner of Education; Deputy Comptroller James A. Wendell; Mr. Ackerman, Secretary to the Lieutenant-Governor; Miss Deterling, Confidential Secretary to Governor and Mrs. Whitman, and many others.

Among those in San Francisco, besides Governor and Mrs. Whitman, who talked frequently over the telephone, were Norman E. Mack, Chairman of the New York Panama-Pacific Exposition Commission, Speaker Thaddeus E. Sweet of the Assembly, Major J. Stanley Moore, Adjutant-General Lewis W. Stotesbury, and Senator George J. Whitney. Talking between these persons related to matters of state, the time of day, the condition of the weather, the success of the New York Day Celebration at the Exposition, personal inquiries, gossip, and just chatter. Governor Whitman personally asked for several of the newspaper men, and each one of them present talked once or oftener to some member of the party in San Francisco.

Rotary Club

ANOTHER event which brought the telephone into prominence in Albany on June 4 was the meeting of the Rotary Club.

The ballroom of the Ten Eyck hotel was engaged for the occasion, and the audience which gathered at 8 o'clock was far greater than the seating capacity. The feature of the program was a display of the motion pictures, "The Telephone Way" and "The Telephone Girl." The pictures were accompanied by a lecture by Mr. W. F. Schmidt, of the Publicity Department of the Company, New York. Mr. Schmidt was introduced by Mr. James Peter Hill, Division Auditor of Receipts of the Company, who in turn was introduced by Mr. William R. Adams, District Commercial Manager.

The President of the Club, Mr. Charles M. Winchester, presided. The telephone pictures and lecture followed the regular business meeting of the Club, and afterwards there were a number of interesting speeches and much singing. The evening closed with a buffet luncheon.

The following reference was made in the weekly letter of the Secretary under date of the 9th inst:

> Last Friday evening's affair seems to have been a real hit. William R. Adams and Apostolic Names Hill and their Telephone Company are to be congratulated on giving us such good pictures. They gave us an inside view of the phone business and cleared up some of the things we didn't know about it. Those girls at the switchboard certainly need nimble fingers as well as rolling tongues. Publicityman Schmidt was a mighty good explanationer. If you didn't get the three souvenirs they gave out stop in and see Hill and Adams in the building and get 'em.

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Around the Giant Telephone at the Panama-Pacific Exposition

THE Western Electric exhibit at the Panama-Pacific Exposition occupies a space of about thirty by one hundred feet in the Manufacturers' Palace. In the center of the exhibit a huge reproduction of the standard desk telephone set, fifteen times as large as the sets we use, draws the attention of the passers-by, and a comfortable, upholstered seat, built around the base of the great instrument, and capable of accommodating twenty people, offers to the weary sightseer an inviting resting place from which to observe the many interesting devices of Western Electric manufacture. The big telephone excites much comment and many amusing remarks. Visitors often facetiously question whether this is the instrument one uses in talking across the continent.

Central Pavilion, Western Electric Exhibit, Panama-Pacific Exposition

Although the big telephone is the most talked-of feature of the exhibit, the central pavilion in which it is situated, and the pergolas at either side, are filled with an intensely interesting variety of the results of Western Electric ingenuity. At either side of the entrance stand Western Electric reels of 200-pair lead-covered telephone cable. In placing these reels it was necessary to arrange special supports on which they could rest to prevent their enormous weight from breaking through the floor. On the walls at the back of the room are two flattened hemispheres representing the Eastern and the Western halves of the globe; and small electric lamps on the maps show the forty-nine cities, throughout the world, in which the Western Electric Company and its allied interests maintain offices. These lights flash every twelve seconds, that being the approximate rate of manufacture of telephones at the Western Electric's manufacturing plant at Hawthorne. Under the hemispheres a set of pictures shows the evolution of the desk telephone from the earliest crude instrument of wood to the latest No. 1020 type stand. All kinds of telephone apparatus and wiring are displayed in this room, and a No. 1 type switchboard with equipment for two stations, showing every step in the operation of the circuit, from the lifting of the receiver at the calling station to the answering of the called telephone. Loud speaking receivers of the latest model are also displayed here, and five complete telephone train-dispatching way-stations.

One of the pergolas is devoted to the display of the various housekeeping assistants for which the Western Electric is famous. The "Western Electric Household Helps" include vacuum cleaners, washing machines, dish-washers, heating devices, sewing-machine motors, electric ranges, fans, etc. The only public telephone station in the Manufacturer's Palace is situated in this room and the switchboard, a No. 4 P.B.X., has a plate glass back, so people who come to use the telephone may see just how the switchboard works. A variety of devices and appliances for divers uses is shown in the other pergola, among them being glass insulators, and pole line material, with samples of different woods used for telephone poles and crossarms of pine, fir, and creosoted pine. A special delight for the youngsters who will some day be good telephone men is the miniature model pole line.

On the wall of this room is a large painting of the Western Electric works at Hawthorne. The picture is made from an aeroplane view and gives a very complete idea of the factories, quite parallel to the comprehensive view of Western Electric products and activities which a visit to the exhibit affords.

Transcontinental Demonstration for Chinese Merchants

A DEMONSTRATION of the transcontinental telephone service was held at 15 Dey street on Saturday, June 5, at 11.30 A.M., for the Chinese Commercial Commissioners who have been visiting New York. The members of the Commission who were guests of the American Telephone and Telegraph Company and the Western Electric Company at this demonstration were: Mr. Yingming Chang, son of Mr. Chen Hsun Chang, chairman of the Commission; Mr. Chi Cheh Nieh, vice-chairman of the Commission, a cotton manufacturer, proprietor of the Heng Foong Cotton Manufacturing Company, director of the Cotton Mills Owners' Association and representative of the Chinese General Chamber of Commerce; Mr. S. C. Thomas Sze, coal merchant, assistant general manager of the Kailan Mining Administration, Tientsin; Mr. Chaichang Woo, senior secretary of the Ministry of Agriculture and Commerce, Pekin; Mr. Mingtuan Siao, one of the secretaries to members of the Commission; Mr. David Z. T. Yui, honorary secretary of the Commission and executive secretary of the Lecture Department, Y. M. C. A. National Committee; Mr. Chachsin Pian, cotton merchant and representative of the Chamber of Commerce, Tientsin. The party was accompanied by Mr. E. T. Williams, chief of the Bureau of Far Eastern Affairs of the State Department, Washington, D. C. Several of these gentle-

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men visited the Western Electric Company at 463 West street, after which they were escorted to the office of Mr. J. J. Carty, chief engineer of the American Telephone and Telegraph Company, by Mr. P. K. Condict, foreign sales manager of the Western Electric Company and Mr. J. R. Tulloch. Here all of the guests were introduced to Mr. Carty by Mr. William C. Breed, chairman of the Reception Committee of the Mayor of New York.

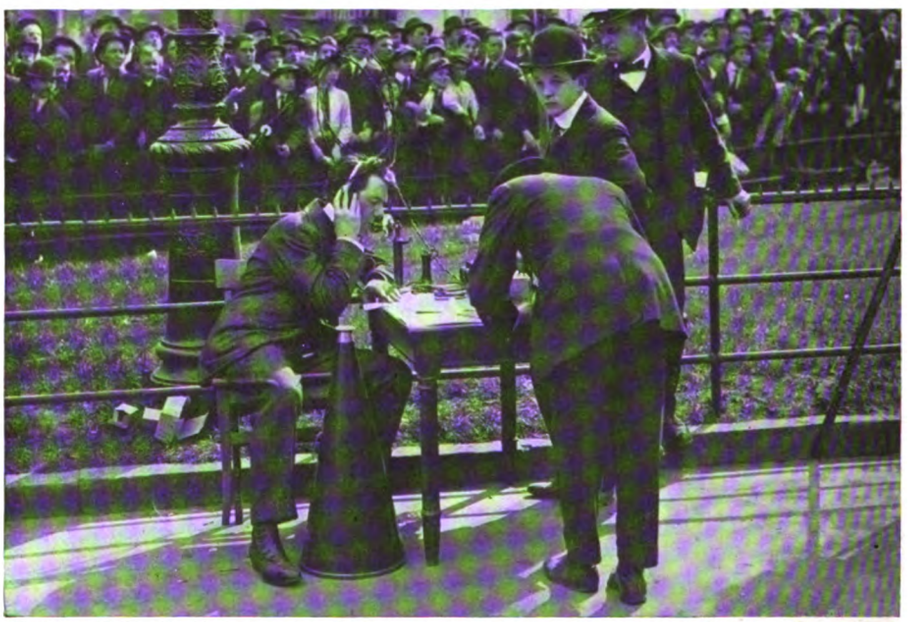
Mr. Carty addressed the Commissioners briefly on the development of the telephone in the United States, the achievement of transcontinental telephone service, and the share which the Western Electric Company has had in bringing the art to its high state of development in this country. The guests were then taken to the demonstration room where they talked with Mr. Shu Zen-Chin, consul of the Republic of China at San Francisco; Mr. Allan S. Chow, of Shanghai, secretary of the Commission from the Republic of China at the Panama-Pacific International Exposition; Mr. Chen Chi, of Pekin, the Chinese Commissioner General at San Francisco; and Mr. Emil S. Fischer of Pekin, foreign secretary to the Chinese Government Commission, who were assembled at the Exhibit of the American Telephone and Telegraph Company in the Liberal Arts Building at the Exposition in San Francisco.

In introducing the first speaker at New York to the Chinese Consul General at San Francisco, Mr. Carty stated that the Chinese language was the first language other than English to have been used in talking between the Atlantic and the Pacific. The members of the Commission, some of whom are graduates of American universities, during the demonstration talked in both Chinese and English, and expressed themselves as delighted with both the quality and volume of the transmission. A written record of the impressions received by the guests at San Francisco was preserved in the register which is kept at the American Telephone and Telegraph Company's Demonstration Building. The Consul General wrote in this book: "Enjoyed the talk with my countrymen in New York." Mr. Chow wrote: "Enjoyed the talk with New York City friends from the Chinese Republic." Mr. Chi recorded his impressions in Chinese; while Mr. Fischer wrote: "The achievement to get a talk over a telephone line from San Francisco to New York City is greater than any of the wonders previously achieved. It gave me great pleasure to have this wonderful talk over a line 3,400 miles long."

"Seeing" a Race by Telephone

THE *Evening Mail's* Modified Marathon race, one of the biggest events of the athletic world, was even more successful this year than in the past. Huge crowds, numbering in all over a million people, gathered along the route from the Bronx to City Hall, to see 1,300 of the best athletes in New York compete in a thirteen-mile-two-hundred-yard race through the city streets.

The telephone figured prominently in the success of the affair from the point of view of the enormous crowds gathered at the finish line in City Hall Square. Here a man sat at a table with a telephone and a megaphone at hand and kept in touch with the entire progress of the race. As the leaders passed Forty-second street, Fourteenth street, and other centers, the news was received at City Hall Square by telephone and was announced through the megaphone to the anxiously waiting crowd. Thus although the crowd at the finish actually saw only the final of the big race, still the whole competition was before them from the start and they were kept in such close touch with its progress that they could keep a complete picture of the race in mind as it was being run.



Evening Mail's Modified Marathon, May 8, 1915. Spectators at the finish in City Hall Square were kept informed of the start and progress of the race by telephone

Hannes Kolehmainen, Winner of Evening Mail's Modified Marathon, May 8, 1915

"Seeing a race by telephone" seems to imply an extravagant stretch of the imagination or a poor substitute for sport. Actually, it implies neither, but the satisfactory solution of the problem of watching a race that is too long to see with the physical eye. To stand at the finish line, and, after following the earlier part of the race by telephone so that the suspense and uncertainty may work their cumulative effect, to actually see the winner break the tape—this, the hero-worshipers who stood in City Hall Square will tell you is the way to see a Marathon.

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The Telephone Problems of the Railway System

Abstract of a Paper by M. H. Clapp, Superintendent of Telegraph Department—Northern Pacific Railroad Company

MR. M. H. CLAPP read a most interesting and valuable paper before the Telephone Society of New York on April 27, entitled, "A Comparison of the Application of the Telephone in Commercial Companies with its Application on Steam Railroads." Before taking up the real points of the paper Mr. Clapp ran over briefly the history of the telephone. The number of telephones in commercial service has grown from nothing to over ten millions in thirty-nine years, and the distance over which conversation can be carried has increased from fourteen miles in 1877 to 4,400 in 1915, a truly remarkable development. The railroads did not seriously consider the telephone as a means of communication until recently and only a good beginning has been made now. However, the growth on the railroads has been surprisingly rapid; for example, the main line dispatching by telephone grew from nothing in 1907 to about 80,000 miles at the beginning of the present year. Considering the opposition and prejudice of the railroad people to the telephone, this growth has been even more remarkable than the growth in commercial companies.

Mr. Clapp then discussed the telephone in the application made by the telephone companies. The telephone companies have necessarily a large plant, and to take care of this plant the organization has been quite complete for the engineering, construction, operation, maintenance, etc. The important characteristics of these companies may be briefly summarized as follows:

(1) Large amounts of telephone plant located in comparatively small areas. (2) A very complete organization of employees in all departments. (3) Practically the entire plant used by the company, the property of the company. (4) The telephones of the company are furnished for and used by the pubic.

Regarding the application of the telephone to the railroad no detailed description need be given of the outside plant, as the pole lines, wires, etc., are in most cases essentially the same as the standards of the telephone companies. The plant of a railroad resembles to a considerable extent the long distance or toll plant of a commercial company; in fact, the toll service of the telephone companies has more points of similarity to the application of the telephone on the railroads than any other branch.

The railroad companies have in general three kinds of telephone circuits: the long and short haul talking circuits between different terminals and centers; the long and short haul party lines with a large number of stations connected; and the purely local circuits. The first mentioned circuits are gradually being provided with selective signaling apparatus at the stations for use in dispatching trains and for handling messages, and these circuits are the ones first thought of when mention is made of using the telephone in railroad operation.

M. H. CLAPP
Supt. Telegraph Dept., N. P. R. R.

One of the reasons that the use of the telephone for the dispatching of trains on the railroads was so long delayed was the lack of a device that would successfully and reliably signal selectively a large number of stations connected on a circuit. This problem of the selector was finally successfully solved, so that to-day there are several kinds of selectors that give various satisfactory results.

In order to get the best results in the operation of a selector telephone circuit there should be an operator on the line at the principal terminal at all times that the circuit is in use, as all of the signaling is done by the terminal or sending station. A system should be developed by which the stations along the line could signal one another without the use of ground connections.

Mr. Clapp then went on to show the difference between the telephone circuit as used by the commercial companies and that used in the selective calling circuits.

Considering further applications of the telephone on the railroads, extensive use is at present being made of telephone switchboards at different general offices and operating centers on the systems. It is getting to be the general practice for railroads to terminate their long and short telephone circuits on the different switchboards that are either owned or rented by them, providing a ready means of establishing connections between any two telephones. These switchboards we find used not only in general offices and at terminal points but in shops, freight houses, ticket offices and any point where there is a group of telephones that need connecting one with the other. Since the operation of the railroad is in general a twenty-four-hour job, any switchboard installed on a railroad should be in service at all times.

Among further applications of the telephone on the railroad it may be well to mention two that are considered important; namely, the use of telephones in booths along the right-of-way and of portable telephones. When provided, these telephones are extensively used by the different employees of the railroad in connection with the various emergencies that occur in every-day operation.

Mr. Clapp made reference to the use of the loading coil and said that in general the railroad telephone service had not reached the proper point of development requiring loading coils. Regarding repeaters he said that there is a very good field for "practical" telephone repeaters. on the railroad. They can be installed for regular use to increase the transmission efficiency between any two points, and for temporary or emergency use in connection with circuitous routes in the event of the failure of direct routes.

Composite and simplex sets are being used more and more by the railroads in order to provide simultaneous telegraph and telephone circuits on the same wires. There is in general more opportunity to simplex telephone circuits than to composite them, due to the fact that so many of the telephone circuits on the railroads have a large number of selectors bridged on them.

"The railroads, of course, were obliged to provide some system of transpositions as soon as telephone circuits began to be installed, even where only one circuit was constructed. It was natural for the railroads to try to follow the transposition standards of the commercial com-

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panies." These standards, however, are not entirely adaptable to the conditions on the railroads on account of the necessity of associating the telephone circuits on the same poles with high speed and multiplex telegraph circuits. To meet this condition, the railroads in many cases have had to make up transposition systems of their own.

The important characteristics of the telephone system of a railroad can be summarized as follows:

(1) A considerable amount of outside and inside plant scattered over a rather large territory and, in a great many cases, located at more or less inaccessible points. (2) A plant that in many cases is not large enough to justify a complete and adequate organization for operation and maintenance. (3) The telephone users are employees of the railroad. (4) Parts of the outside plant and, in some cases, the inside plant, are jointly owned with other companies. (5) Difficulty of keeping in touch with and proper control of the telephone plant on account of not having proper authority over the different employees operating and maintaining the telephone equipment.

As outlined above the telephone circuits of railroads and commercial companies are in many respects similar, the principal point of variation being the use of selective ringing party lines in railroad operation. These circuits are peculiar to the railroad service. The railroad companies have the same need as the commercial companies for the use of loading coils, telephone repeaters, composite sets and simplex sets.

The commercial companies have plants that are localized and centralized and in connection with which very complete and adequate organizations are justifiable and are maintained. On the other hand, the railroads have telephone plants scattered over large territories with no very large units at any one point and in connection with which it is difficult to provide the proper organization, especially for the maintenance of the inside plant. The organization of the telephone companies is highly specialized. On the railroad each man must, in general, be familiar with and handle a little of a great many different parts of the work. . . . The telephone company is engaged in one line of work and this particular line is its only consideration; on the other hand, on the railroad the telephone is not a primary consideration, but is one of several parts of a large machine engaged in providing transportation for passengers and freight.

The telephone companies also own their own plant, while a large proportion of the pole lines of the railroad is owned jointly with commercial telegraph companies.

An interesting comparison can be made in connection with the users of the telephone; in the case of the telephone companies the public use the telephone; in the case of the railroads their own employees. Though the general public is often unreasonable and irresponsible in the use of the property of the telephone company, Mr. Clapp says that from his observation the railroad employees give the telephone sets more severe usage than the public.

Mr. Clapp then discussed at length the necessity of proper protection of the telephone lines and also the need of a more uniform and comprehensive plan for testing both telegraph and telephone wires. He said there is need of loud speaking transmitters and receivers by both the operators and dispatchers; this is especially true in the case of the dispatchers.

Regarding transmission Mr. Clapp says there is and should be a greater margin with the railroad companies than with the telephone companies due to different operating conditions. He says that he does not think "a circuit equating to more than twenty-six miles of cable should be used in railroad operation. This limit should not be increased, but should in some cases be decreased."

Mr. Clapp gives an interesting comparison of the service given by telegraph and telephone, citing the advantages and disadvantages.

The railroads are passing through a transitional period from the use of the telegraph to the use of the telephone. It is not only necessary to replace to a large degree the telegraph with the telephone, but it is necessary to provide the telephone for use in place of other means of communication, such, for example, as writing letters and sending messages. The railroads must continue to develop their telephone organizations, both in connection with maintenance and construction, and must give more and more attention to engineering and standards, and, when rebuilding or building new plant, must always have in mind possible telephone circuits. . . . Finally, the railroads should strive to reach the point of telephonic saturation so that at all times any employee can communicate by telephone when necessary with any other employee, either in the general office, in the stations along the right of way, in the yards, shops, roundhouses, or at any point on the system, and so that the patrons of the railroads can also reach promptly by telephone all employees authorized to deal with the public.

To San Francisco with the Pioneers

AS has already been announced, the Fifth Annual Meeting of the Telephone Pioneers of America will take place in San Francisco on September 21, 22, and 23, 1915. The headquarters will be at the St. Francis Hotel. The morning of the first day will be devoted to a business meeting and in the afternoon papers will be presented on a variety of subjects of interest to the Pioneers. In the evening Pioneers and their immediate families will be guests at the annual banquet given by The American Telephone and Telegraph Company.

The Pacific Telephone and Telegraph Company has invited the party for the second day to enjoy a trip to Sausalito and Mt. Tamalpais, boasting the crookedest railway in the world, and one of the most interesting trips in the West.

For the third day in San Francisco a telephone reunion is being planned, at the A. T. & T. exhibit building, where all who wish to do so will participate in a demonstration of the transcontinental line.

The trip will last twenty-three days in all and will be one of extreme interest from the beginning. Special trains will leave the East on September 14, and the next day the party will leave Chicago. After stopping for a short period at Omaha, the "Pioneers' Special" reaches Denver on the seventeenth, and four hours are allowed for a glimpse of the city. That night is spent in Colorado Springs, and on September 19 Salt Lake City is reached, and the next day San Francisco.

After the convention, the party will go down the coast, visiting Pasadena and spending two days visiting the famous Pacific beaches. On September 29 and 30 a trip to San Diego will be enjoyed and after seeing this Fair, the party will go to Los Angeles, where the direct route to Salt Lake City and Chicago may be taken, or the return may be made on the "Pioneers' Special" which will take the Santa Fé route to the Grand Canyon. After a day in the Canyon, the party will continue eastward through Kansas City and Chicago.

The fare is estimated at $227.38 from New York, $213.75 from Albany, and $201.05 from Buffalo. This includes railroad and Pullman transportation for the entire trip and all meals en route in dining cars (at Chicago, Kansas City, Colorado Springs and Salt Lake the meals are not included). Hotel accommodations at San Francisco and Los Angeles and transfer to and from stations at stop-over points are also included in the estimate.

The Telephone Pioneers invite their friends and their associates in the Bell System to join in this trip to the Pacific Coast. The opportunity is a rare one and will undoubtedly be taken advantage of by many who feel that they can take this unusual and enjoyable occasion to see so much of our country.

Mr. R. H. Starrett, secretary, 15 Dey street, New York, will be glad to answer any inquiry in regard to the trip.

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R. V. MARYE
General Attorney

JOHN L. SWAYZE
General Counsel

CHARLES T. RUSSELL
General Solicitor

The New Legal Department

EFFECTIVE June 1, the organization of the Legal Department is as follows:

General Counsel, Mr. J. L. Swayze, reporting to Vice-President F. H. Bethell.

General Solicitor, Mr. C. T. Russell, reporting to General Counsel.

General Attorney, Mr. R. V. Marye, reporting to General Counsel.

The office of Counsel is abolished.

The General Counsel has general charge of all legal, public service commission, legislative, and tax matters.

The General Solicitor has charge of court proceedings, including the authority to prosecute and defend all actions at law or in equity, certiorari, special proceedings, appeals, and other litigations in which the Company be a party or be interested. He shall approve as to form all franchises, grants, contracts, and agreements before acceptance or execution by the Company. He shall accept service of papers, and verify affidavits, pleadings, and papers necessary or incidental thereto. He shall investigate and adjust claims against the Company, and do all things else necessary to protect the Company in legal matters.

The General Attorney has general charge of all public service commission matters in which the Company is involved, and shall have authority to acknowledge receipt of and answer in writing any and all communications and orders received from the Interstate Commerce Commission, Public Service Commission, Second District, State of New York, Board of Public Utility Commission, State of New Jersey, and the Public Utilities Commission in the State of Connecticut. He shall accept service, verify pleadings and papers in matters pending before the Commissions or on appeal from decisions rendered by Commissions, and file with Commissions all tariffs, reports, franchises, grants, contracts, agreements, and other papers required by law. He shall conduct proceedings before Commissions, and take such action in regard to decisions or orders of the Commissions as the General Counsel may direct.

In announcing these changes, Mr. F. H. Bethell, Vice-President, New York Telephone Co., made the following statement:

Matters in which the Company is involved in court and public service commission proceedings have become so inter-related that it has become necessary to merge into one department the offices of Counsel and General Attorney. These offices, in the judgment of the management, have been most efficiently conducted in every particular, and in bringing the departments together with Mr. Swayze as General Counsel and Mr. Russell as General Solicitor, the Company expresses its satisfaction with the manner in which the work in each department has been handled in the past.

Mr. Swayze becomes General Counsel for the Eastern Group, and Mr. Russell becomes General Solicitor, not only of the New York Telephone Company, but also of the Empire City Subway Company, the Friendship Telephone Company, the Holmes Electric Protective Company, and the American District Telegraph Company.

Mr. Marye is appointed General Attorney of the Eastern Group.

John L. Swayze

MR. JOHN L. SWAYZE was born at Newton, Sussex County, New Jersey, October 18, 1868. After his graduation from Phillips Exeter Academy he studied law, and was admitted to the bar as Attorney-at-Law in November, 1895, and as Counsellor-at-Law three years later.

In January, 1899, Mr. Swayze was appointed Prosecutor of Pleas of Sussex County, N. J., serving until March, 1902, when he resigned to accept the appointment of Secretary to Governor Murphy of New Jersey. Two years later, on April 1, 1904, he was appointed Assistant Attorney-General of New Jersey, which office he resigned a year later to join the legal staff of the American Telephone and Telegraph Company. On April 1, 1911, he was made Solicitor of the American Company, specializing in high tension interference, electrolysis, and later in Public Service Commission matters. On December 1, 1912, he was appointed Attorney for the New York Telephone Company. The Bell Telephone Company of Pennsylvania, The Chesapeake and Potomac Telephone Company and their associated companies, and placed in general charge of all Public Service Commission matters. In this office his title was changed on July 1, 1913, to General Attorney, and was so continued until he was appointed General Counsel of the Companies on June 1, 1915.

Mr. Swayze married Miss Eva Couse in June, 1902. After his resignation as Assistant Attorney-General of New Jersey he removed to Newark, where he now resides. He has always been connected with the Merchants' National Bank of Newton, N. J., as a director, and from August, 1905, to December, 1912, was its president, succeeding his father, who founded this institution and was its president up to the time of his death.

Charles T. Russell

MR. CHARLES T. RUSSELL was born in Liverpool, England, December 11, 1877, of American parents, his father then being a shipbroker at Liver-

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pool and afterwards United States Consul there under the first Cleveland administration.

Mr. Russell was educated by private tutors, in private schools in England (one year in France) and at Yale University, from whose Law School he graduated in 1899. In that year he was admitted to the Bar of the State of Connecticut, practicing in New Haven for about a year.

Early in 1900 he was admitted to the Bar of the City of New York, and for nearly three years he was Assistant Attorney in the Trial Department of the Metropolitan Street Railway Company, engaged exclusively in trial and other court work. He resigned this office to take a position with Messrs. Atwater & Cruikshank, of 43 Cedar street, later being made a junior member of that firm. While there he was engaged in general practice, but especially in corporation and litigated work. Through his association with this firm Mr. Russell became acquainted with Mr. John H. Cahill, then Vice-President and General Counsel of the Company, and at the latter's instance accepted a position in the Legal Department in 1906. Upon Mr. Cahill's resignation in March, 1911, Mr. Russell was appointed Counsel, and has since had charge of the legal and tax matters of the New York Telephone Company and the Empire City Subway Company (Limited) and of the former's subsidiary companies in the States of New York and New Jersey.

Mr. Russell is a member of the Association of the Bar of the City of New York, New York State Bar Association and American Bar Association, and of the Yale, Ardsley, Railroad and other clubs.

In May, 1903, he was married to Miss Florence Sprague Shailer.

R. V. Marye

MR. MARYE made his advent into the telephone business at the same time as Mr. Swayze, with whom he has been associated during his entire service with the Bell System. On May 1, 1905, he came from Richmond, Va., to New York, entering the Legal Department of the American Telephone and Telegraph Company.

The third son of Colonel Morton and Caroline Homassel (Voss) Marye, Mr. Marye was born October 1, 1868. He graduated in 1886 from Randolph-Macon College, Ashland, Va., and on July 1, 1891, received the degree of Bachelor of Law from the University of Virginia. In January of the following year he was admitted to the bar of Virginia and practiced in Richmond continuously until he was selected to become a member of Mr. Swayze's staff in the offices of the American Telephone and Telegraph Company. With this company he remained until December 1, 1912, when he came with the Eastern Group in the Attorney's, subsequently the General Attorney's, office.

On January 23, 1906, Mr. Marye married Miss Julia M. Morton, of Richmond. He comes of a prominent Virginia family, and is a member of the American Bar Association.

News of Italy's War Move Telephoned Along the Trenches

THE telephone on the field of battle speeds tidings of joy as well as orders to advance and directions for firing. Late in May the telephone wires vibrated through the length and breadth of the Allies' lines with the kindling word that another nation had taken her stand beside them. Little that has come from the writers at the front is more stirring than the following description by William Philip Simms, United Press Staff Correspondent, of the way the news of Italy's entrance into the war was received in the trenches of the Allies:

A mighty chorus from 2,000,000 throats, sweeping down the 500 miles from the North Sea to the Swiss border in thunderous refrain of "La Marseillaise," greeted the welcome news that Italy had entered the war against Austria.

The story of how that message went flashing along the trenches at dusk of a brilliant Whitsuntide, how it spread to every remote outpost along the world's greatest battle front is without parallel in history.

King Victor Emmanuel signed the declaration of war in Rome at two o'clock Sunday afternoon. France was immediately notified. Minister of War Millerand flashed it to General Joffre at General Headquarters.

With scarcely a second's delay, it went rushing down from army commanders to corps commanders and successively down through generals of divisions to commanders of brigades, branching out fanwise from each new center until every colonel, major, captain and lieutenant along the firing line knew that Italy had entered the lists on the side of the Allies at last.

The message raced on over field telephone wires—wires strung precariously through the ruins of devastated villages, on forest trees, on stakes driven in fields of buttercups. It reached the telephone operators on the front line observation posts. They flashed it on to the troops blazing away at the Germans in the trenches a few yards distant, to the batteries of artillery screened behind the hills, to the men in the hidden gunpits, to observers in the towers and tree tops—to everybody everywhere.

It was sunset—the hour of the Angelus. Along the line there seemed to come a lull. Heavy guns paused as though in reverence. Field pieces observed silence as if for a moment's devotion on this new day of Pentecost.

Suddenly the strange, almost weird, silence was broken. Spontaneously the troops began "La Marseillaise," at first singing softly and then breaking into a ringing refrain as the words ran along the battle front in the greatest chorus the world has ever heard.

"*Allons enfants de la patrie*," they thundered, "*le jour de gloire est arrivé!*"

The roaring song startled the belated field larks, long since grown used to belching cannon. They rose and soared wildly above the trenches.

Instinctively, the Germans in the opposite trenches knew what this thunderous chorus meant. They did not need to read the placards printed by the French during the night and posted on top of the trenches for German perusal at dawn. They shouted back: "God punish Italy."

Then from the German trenches came the strains of "Die Wacht am Rhein" and shortly afterward the rattle of bullets. The Germans were riddling the French placards.

The French only laughed derisively. They printed new cards reading: "Your Goose is Cooked" and planted them amid a waving field of Italian flags, improvised—heaven knows how—along the ramparts.

A Nonchalant Lineman

OUR linemen will perhaps conclude from this account of an army lineman's job in France, which appeared in the New York *Times*, that the danger which storms and sleet afford them is not quite the last word in excitement for a lineman—at least in these momentous days.

While he is talking the khaki person in the meadow stops at a post, shakes it as if to test its strength, climbs it, does something to a wire that is hung from it, climbs down again and strolls along toward you. He's whistling, so are rifle bullets, now and then. Some are uncomfortably close; they are spent bullets and they're noisier than bullets newly sent. He carries a canvas bag hung from his shoulder, full of wooden tags. It is evidently his duty to fasten the tags on to the field telephone wires that run across the meadow to the dugouts in the town.

He climbs a pole at the foot of the road, still whistling. It's a very wabbly pole. He looks up to the colonel and smiles. "Pretty risky pole," he says. And then he begins to whistle again. He was out in the open where any one of the bullets might have hit him, but he was "delivering" his tags as coolly as the postman carries the mail from door to door.

"They get used to it," explained one of the officers.

All this time the German and English shells had been intertwining their pathways in the air above us. A whine came near to us on our right and a hundred yards away a shell exploded and threw up a huge cloud of earth, topped by smoke. On our right, five minutes later, another shell fell, but further distant. Five of them came within fifteen minutes.

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Miss Bertha M. Lareau
Evening Chief Operator, Glens Falls, N. Y

Miss Loretta S. Griffin
"B" Operator, Buffalo

Miss Phoebe F. Squier
Chief Operator, Elizabeth, N. J.

Prize Operators

MISS BERTHA M. LAREAU, Evening Chief Operator at Glens Falls, N. Y., was the winner of a trip to the Panama-Pacific Exposition, for obtaining subscriptions for the Glens Falls *Post Star*. Miss Lareau, true to her business training, and confident of the wisdom of "selling by telephone," used the telephone almost entirely in soliciting subscriptions. "There were but few places I had to walk to to get subscriptions," she said, and the success of her methods was demonstrated by her standing at the end of the contest. Miss Lareau found her fellow employees, of all three departments of the Company, ready to coöperate with her in the true Bell spirit.

"It was my great desire," continues Miss Lareau's account, "to take this trip, but as none of the contestants seemed inclined to do so, and as such a journey would be unpleasant to take alone, I accepted with the others the $230 in gold."

Miss Lareau's success in this contest was particularly creditable because of the fact that she did not start her campaign till two weeks after the contest opened. Her remarkable success is a credit to her ability and to the well-established methods she employed. Selling or canvassing by telephone is the way to cover the ground, and Miss Lareau is to be congratulated upon her wisdom in adopting the procedure which it was so fitting for her, as a telephone employee, to use, and upon the striking demonstration of its success and her own signal ability.

OUT of forty-one entries in a contest held by the Buffalo *Enquirer* during the month of April, to determine the most beautiful girl in Buffalo, Miss Loretta S. Griffin, a "B" operator at our North exchange in that city, carried off the honors. The prize was a trip to the expositions on the Pacific Coast.

Miss Griffin, through the combined efforts of the employees of the different departments of the Company and her friends, was in the lead through the entire contest. On May 5 the *Enquirer* announced that Miss Griffin had won the contest, her total votes being 1,305,170; the next high contestant, who had been a close second all through the contest, had 1,264,480 votes.

As winner of the contest, Miss Griffin, with the winners of similar contests in forty-five other cities throughout the country, is given a trip without any expense to herself to the Panama-Pacific Expositions at San Francisco and San Diego and a visit to Universal City. A special de luxe train carrying the party left Chicago June 8, and it is expected that the trip will be concluded about the middle of July. No effort was spared to enlist some of the most prominent women in the country to act as chaperones to the party on their trip to the Pacific Coast.

At Universal City the winners will participate in a motion picture production, and at least one of the young women will be given an opportunity to become a "movie" star.

TRIPS to the Panama-Pacific Exposition were the prizes in the six districts covered by a contest conducted from February 1 to April 10 by the Elizabeth (N. J.) *Journal*. Miss Phoebe F. Squier, Chief Operator at our Elizabeth office, was the winner against eleven other contestants in her district. In addition to the trip to the coast, there were five special prizes offered for the contestants receiving the highest number of votes from March 6 to 20 inclusive. Miss Squier also won the second prize in this contest, which was a $125 diamond ring.

The party will leave New York by special train on July 3 and will return to Elizabeth about July 27.

Not only will Miss Squier herself benefit from this remarkably interesting and broadening trip, but, undoubtedly, the whole Elizabeth office, over which she presides so ably, will receive a fresh impetus from the new ideas and wider outlook which she will bring home.

These three young ladies constitute but a fraction of the number of bright and progressive operators of our Company who have distinguished themselves in their communities by winning contests of various kinds. So large is the number that some limit had to be found in reporting the successes, so the gauge was set at the contests which had as prizes trips to the Pacific Coast. The stories of these three young women and their achievements are therefore not only interesting in themselves, but significant as examples of the wide awake ability of our force of operators.

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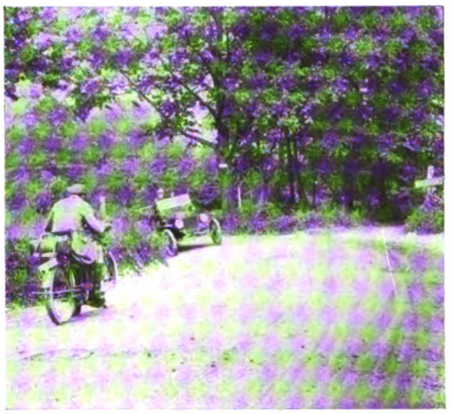
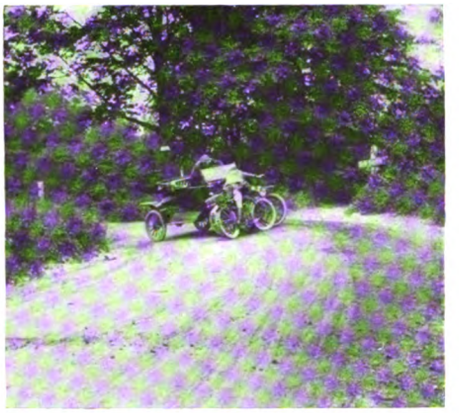
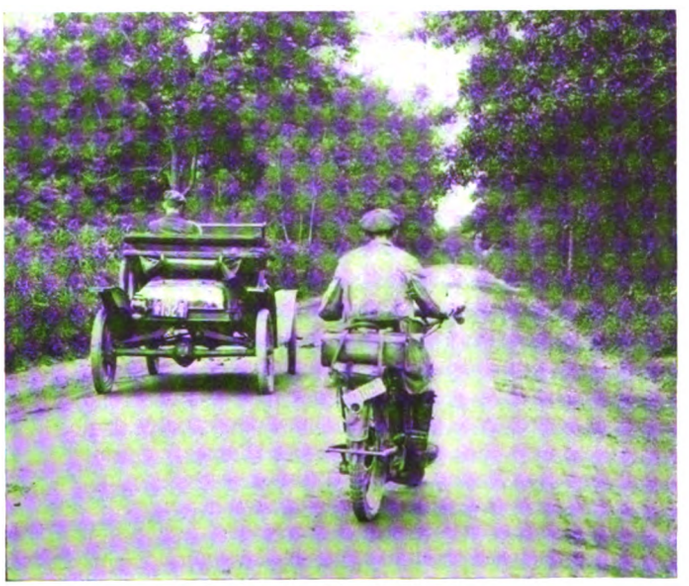


Observe the Rules of the Road—

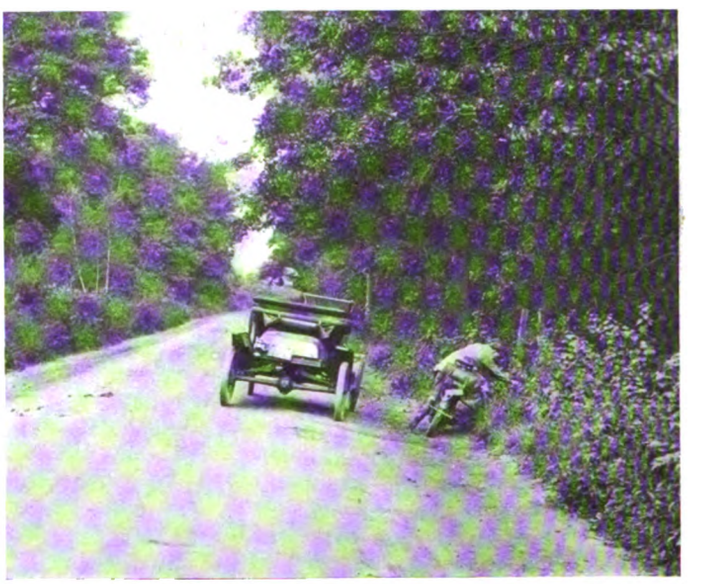


And Avoid a Collision Like This.

Safety First and Stick to the Right—



Except in Passing a Car Ahead.



So Remember the Rules of the Road.

The Helper Is not Holding the Guard Rails as the Splicer Is Getting Out of the Manhole—

With the Result That the Guard Rail Slips and the Man Falls Back and May Be Injured.

This Picture Shows the Proper Position of Helper as the Man Is Getting Out of Hole.

Accidents Which Should Never Happen and How to Avoid Them

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Main Society

THE 161st meeting of The Telephone Society of New York, and the last meeting for the season 1914–15, took the form of a vaudeville show and smoker given at the New Amsterdam Opera House, Manhattan, on the evening of Thursday, May 27. The interesting character of the meeting drew an attendance numbering about 2,600, which taxed the capacity of the Opera House. Mr. Theodore N. Vail and Mr. U. N. Bethell received an ovation upon their entrance, and later in the evening three cheers were given for them, the audience standing. Among the other distinguished guests present were Mr. J. C. Lynch, General Superintendent of Traffic, Bell Telephone Company of Pa.; Mr. E. Corrigan, General Superintendent of Traffic, Chesapeake & Potomac Telephone Company; and Mr. A. L. Downs, General Superintendent of Traffic, Pacific Telephone & Telegraph Company.

The only business transacted was the reading of the report of the secretary-treasurer and the report of the Nominating Committee, the vote on the amendment to the constitution, and the election of officers.

The report of the secretary-treasurer showed that the finances and membership of the Society were in a most flourishing condition, there being 3,047 members on the roll, and a balance in the treasury of $2,862.77.

The Nominating Committee presented the following ticket for officers of the Society and members of the Executive Committee for the following year:

President, F. B. Jewett, Assistant Chief Engineer, Western Electric Co.

Vice-President, J. H. Gordon, Jr., General Superintendent of Traffic, New York Telephone Co.

Secretary-Treasurer, J. D. Newman, Editor THE TELEPHONE REVIEW, New York Telephone Co.

EXECUTIVE COMMITTEE

R. Gordon, Stores Manager, Western Electric Co.

F. L. Devereux, Auditor, Long Distance Lines, American Telephone & Telegraph Co.

O. B. Blackwell, Engineer, American Telephone & Telegraph Co.

I. J. Thorp, Division Plant Superintendent, New York Telephone Co.

F. E. Congdon, Division Equipment Superintendent, New York Telephone Co.

H. W. Casler, Division Advertising Manager, New York Telephone Co.

The candidates were unanimously elected, the secretary being instructed by acclamation to cast one ballot for the entire ticket.

The amendment to the constitution, proposed at the last meeting, was unanimously carried as follows:

Article III, Section 4, Paragraph (d):

After "Membership" on sixth line of this paragraph, add "(4) Entertainment," and at the end of present paragraph (d) add: "The Chairman of the Entertainment Committee shall add to his Committee as many members of the Society not on the Executive Committee as he may consider necessary.

The entertainment feature of the program was next in order as follows:

PROGRAM

PART I

7.45—8 P.M. Overture.....*Selected*
Blue Bell Orchestra

8—8.30 P.M. Business Meeting.

PART II

8.30—10 P.M. VAUDEVILLE.

Blue Bell Orchestra—"Sunshine and Showers"—*Tobani.*

Mang and Snyder—Athletes.

Trovato—Eccentric Violinist.

Blossom Seeley (Mrs. Rube Marquard), in a Selected Repertoire of Songs.

Henry Lewis, presenting a "Vaudeville Cocktail."

The Belles of Seville, in a novelty Spanish Singing and Dancing Specialty.

Performance given under the direction of The Private Entertainment Department, B. F. Keith Theatres, United Booking Offices, Palace Theatre Building, New York City. Personal Supervision of Frances Rockefeller King.

PART III

SONGS

Join in the Second Chorus of Songs—and Sing! Sing! Sing!

"Tipperary"

"Chinatown, My Chinatown."

"When You Wore a Tulip and I Wore a Big Red Rose."

"I Didn't Raise My Boy to Be a Soldier."

BOXING BOUTS (Special)

140 pound Class—Four Rounds
Johnny Burke *vs.* Johnny Allen
160 pound Class—Four Rounds
Jess Olsen *vs.* Charlie Alberts

Finale.....*Selected*
Blue Bell Orchestra

Hudson Section

THE last meeting of the 1914–1915 season was held by the Hudson Section on Monday evening, May 10, in the auditor's quarters on the sixth floor of the new Telephone Building, Albany. This was the first meeting in the new building and there was an attendance of about 250 members who made it one of the most enthusiastic and enjoyable ever held by the section.

The speaker of the evening was Mr. H. F. Thurber, vice-president of the New York Telephone Company, who talked informally in a most entertaining and instructive manner on such interesting matters as the relations of officers and employees, working conditions of employees, Pension Plan, welfare work, and especially the work done in the Hudson Division and the future prospects and demands of the business in this Division. Mr. Thurber's remarks were enthusiastically received.

Following the reports of officers and committees, which showed the section in a very flourishing condition, the following officers and Executive Committee for the next season were elected:

Chairman, F. L. Arland, New York Telephone Company.

Secretary-Treasurer, F. R. Guardineer, New York Telephone Company.

EXECUTIVE COMMITTEE

W. R. Adams, New York Telephone Company.

J. H. Dodge, New York Telephone Company.

F. L. Flanagan, New York Telephone Company.

G. G. W. Green, Glen Telephone Company.

E. H. Greenleaf, New York Telephone Company.

J. P. Hill, New York Telephone Company.

H. McIver, New York Telephone Company.

J. C. Peck, New York Telephone Company.

S. H. Riker, American Tel. & Tel. Company.

CHAPTER MEETINGS

In the Hudson Division it has been the practice to hold Chapter meetings of the Telephone Society at various points for the convenience of members who are unable to attend the regular meetings in Albany. Such meetings have been held frequently at Glens Falls, Kingston, and Poughkeepsie, Newburgh meeting with Poughkeepsie. Occasionally the papers read before the Albany Section are presented at these Chapter meetings, but often the local gatherings conduct their own proceedings with the most satisfactory results.

At the Kingston meeting held in March, the suggestion was made that the season be closed with a banquet, and accordingly on April 20 about sixty men sat down to dinner in the banquet hall of the Y.M.C.A. Many of the division and district managers of the Company were among the invited guests. The decorations consisted of American flags, Blue-Bell hats, Blue-Bell napkins, and carnations. After the dinner, which was interspersed by the

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singing of popular airs, Mr. F. L. Flanagan, district traffic chief, presented his paper, "Traffic Irregularities and Why," which he had read before the section in Albany. A lively discussion followed. Never at any meeting of the local Chapter had there been manifested such good-fellowship as on this occasion.

Central Section

THE Central Section held its last meeting of the year at the Assembly Hall, Court House, Syracuse, N. Y., on Tuesday evening, May 18. After reading the annual reports of committees, officers for the coming year were elected as follows:

J. L. Parker, chairman.
E. M. Gladden, vice-chairman.
E. P. Brennan, secretary-treasurer.
F. J. Chesterman, chairman of Papers and Meetings Committee.
H. VanDerBogart, chairman of Finance Committee.
A. M. Cartter, chairman of Membership Committee.

There was no paper delivered before this meeting; instead the evening was devoted to a discussion of our policy for the next year and of ways and means of increasing the membership and broadening the scope of the Society.

Western Section

BUFFALO

THE Western Section held its thirty-first meeting in Buffalo, on May 27, in the Telephone Building. A large and enthusiastic gathering was present to wind up the activities for the year. The ticket recommended by the Nominating Committee was unanimously elected. The program in full, which was sent out in advance, and which was lived up to in royal good style, was as follows:

The Last Meeting of the Season. The Big Noise.

PROGRAM

An Almost Conference of the Big Four or at Least, the Four Big Bosses, Mr. Spaulding, Mr. Welch, Mr. Jacobs and Mr. Gaul. Not too serious, y'understand.

Cracking good music and panning parodies on people we all know.

A real, live cabaret performance with folks who are recognized as the best in the city.

Much eats in the form of a buffet luncheon, not forgetting cigars and cigarettes.

THE ONLY BUSINESS OF THE EVENING

We will elect our officers for the coming year at this meeting. The candidates are: Chairman, H. C. Stephan; Vice-Chairman, A. F. Neal; Secretary-Treasurer, P. W. Helffenstein.

Executive Committee, R. J. Wollmuth, H. J. Dodson, J. J. Welch, R. E. Latta, New York Telephone Co. L. F. Philo, Western Electric Co., F. C. Saunders, Connecting Companies.

This ticket represents real work on the part of a real Nominating Committee.

We must also listen to reports, particularly from the Secretary-Treasurer, but it is herewith guaranteed that the business of the meeting will not take more than half an hour at the most.

The Society would like to pay for the whole works, but the treasury is not strong enough.

Each man attending will be asked to pay 50 cents admission, but you should worry about the 50 cents. You will get your money's worth and more.

In order to tell the caterer how many to feed, we must have a definite assurance of how many are coming.

ROCHESTER

The last meeting of the year was held by the Rochester Chapter on the evening of June 9. There was no paper, but the members enjoyed a smoker with music and informal speeches, followed by a buffet supper. The attendance was large and the meeting a complete success.

The officers elected for the coming year are as follows: Chairman, H. J. Schroll, Assistant District Traffic Manager; Secretary, W. N. Williams, Engineer Plant Department; Member of Executive Committee, B. F. Gibson, Chief Clerk Commercial Department.

Some Things We Know

By Florence G. Carncross, School Manager, Hudson Division

A MAN who is at the head of a large concern employing a great many women and girls recently asked me this question: "To what do you attribute the loyalty, interest, and enthusiasm displayed by telephone employees, not only in their work but at all times and under all circumstances?" I told him I felt these qualities were characteristic of the class of girls in our employ. I also felt that in some few cases these sentiments were partially the result of careful training, and I further stated that it was quite possible that appreciation of the uniform and impartial treatment accorded each and every one would tend to develop these traits.

I wonder, however, how many of us have ever stopped to analyze the motives that actuate us to perform our duties and live our lives in such a way as to merit this reputation; probably it is because we are developed along these lines from the moment we enter the "service"; possibly it is the result of association and example, and it may be that it is just because we, of the rank and file, as individuals, want to do our part toward maintaining the standard of an organization which is paramount to all others.

Whatever the motive may be, it is, nevertheless, wonderfully interesting and equally gratifying to note the thought, study, and effort put into the work by each and every employee. The local operators show it in their friendly rivalry to give the best service; the toll operators demonstrate it in their efforts to reduce the percentage of lost calls; supervisors spare neither time nor labor to increase efficiency in the individuals of their respective divisions, and last but by no means least are the Chief Operators, whose untiring efforts are directed not only toward perfecting present conditions, but also to making the foundation of the future operating forces so strong, so firm, and so reliable, that there will be no undoing or lessening of that which has been accomplished in the way of perfecting the work. It is in such ways as these that the people holding supervisory positions demonstrate their worth—they are the ones who have studied the qualifications of those in their charge, developing the good and eliminating the objectionable tendencies, and it is conclusive proof of their own ability when they can do this to the extent of always having someone ready for the opportunities that are sure to come, while to those who are looking forward to such opportunities there is always a tremendous incentive to "work up."

In all ranks, the desire to help one another is strong, and I think it is this spirit of coöperation that tends not only to make our service what it is, but also enables us to get so much happiness out of our work. To the older and experienced employee, the satisfaction of work *well done* is happiness; with our younger and newer associates, however, it is primarily a feeling of contentment based upon the treatment accorded them by those in charge, and it is this helpful treatment which later results in a spirit of loyalty, interest, and enthusiasm, that not only makes work easy and the time devoted to it happy, but also gives us the enviable reputation we enjoy, of being all that these terms imply.

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"Injuns"

Being the Only Indian Story Ever Written In Which No One "Bit the Dust"

IT all happened out on the Coast and we over here on the Atlantic Seaboard might never have heard anything about it if it hadn't been that the story got too close to the Pacific end of the Transcontinental Line and so seeped through to New York.

A telephone man has become a full-fledged Indian!

Not that there's anything strange about that, because we happen to know that many a telephone man out on this side of the line is considerable of an Indian himself, even though he doesn't wear war paint and feathers.

But our Pacific Coast telephone-Indian (if the new red man doesn't object to being hyphenated!) is the sure enough sort. He's taken out the first papers necessary to Indian citizenship; his red brothers have opened wide their wigwams; they have held up their right hands palm outward in token of amity; they have passed around the pipe of peace, and buried the hatchet so deep that even a Transcontinental pole-hole digger couldn't excavate it.

No Jerked Venison on the Board, but—

Cheered but Not—Inebriated

Who's the new Indian? G. E. McFarland, President of the Pacific Telephone and Telegraph Company, one of the "army" who's been doing big things out in the land of flowers and whom we hope to hear more of from now on, since we're linked closer together by the "big strand."

But we started out to tell something about the red men, whom, in the spirit of camaraderie that binds all telephone workers, we'll have to welcome as sort of second cousins. They are of a tribe that makes its headquarters up in the big country, in Glacier Park, California. Uncle Sam's wards they are now, and, just to show what real Americans they are, they journeyed down to the big fair at San Francisco. Here Chief (*née* President) McFarland surrounded the tribe and trundled them all home to dinner.

After the dinner President McFarland was adopted by the tribe, but if any one wants to know what the attendant ceremonies were he'll have to go through the initiating process himself. Even our gentle informer, the Transcontinental Line, couldn't tell us that.

Chief McFarland, however, is mighty proud of his new title. He's on the job out on the Coast every day, and any time you have your ear in the vicinity of a Transcontinental Telephone receiver, don't think you're going to lose your hair if you happen to hear a war whoop.

"Winton Six" Heap Much Better Than Indian Travois

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Long Distance Selling Methods

Chalmers Motor Company Urges Its Salesmen To Use Telephone at Best Selling Season of Year

"Competition Is Keen. Methods of Approach Must Be Carefully Considered. People Are Always 'In' to Long Distance. It Is Quicker and Cheaper than Traveling and More Effective than Writing. Long Distance Widens Your Field of Action. It Increases Your Profits. Use The Telephone. You Will Make More Money."

THAT'S the closing argument in a straight-from-the-shoulder "ginger talk" on selling by telephone, which the Chalmers Motor Company recently gave to all its dealers in the United States through the medium of its house organ, *Chalmers Monogram*.

It is quite evident that this big company knows from experience that the telephone permits quick, economical salesmanship over a wide territory and insures better and more profitable use of a salesman's time than any other medium; for otherwise it would hardly devote an entire issue of the *Monogram*, as it has, to urging dealers to sell more by telephone. What is just as significant is the fact that it put this strong emphasis upon the telephone way of getting business at a time when the automobile selling season was at its height, when only the best selling mediums would be considered.

The use of this verbal spur by the Chalmers Company to get its agents to make greater use of the telephone is an encouraging sign. It shows that the possibilities of the telephone as a selling medium are receiving greater recognition and attention from business men. It means the quickening and broadening of business activities throughout the country as the use of the telephone increases and that means more business for us, and what is more important, a hastening of the return of better business conditions in the United States.

The first page of the *Monogram* has a drawing of a business man at his desk, telephoning to several prospects, while each of his competitors, by personal travel, is reaching only one possible buyer in the same time. Then follows an enthusiastic "get busy with the telephone" talk, that rings with conviction. The writer must have remembered the old dictum, "Look into your heart and write," for his article bears the imprint and seal of one who knows from experience what the telephone can do when properly employed. Statements from dealers, telling of their successful use of the telephone to approach prospects, make sales, and speed up their work generally, complete the issue.

Hugh Chalmers

In part the *Monogram* says:

Everybody is always at home to long distance. You use the telephone for local calls every day, yes, every hour. You buy and sell over it. It's quick and cheap. Why not extend its usefulness and profit? There is a circle of 100 miles around your office, in which you can deal just as easily over the telephone.

Even the best salesman doesn't always get an interview. People are experts in "dodging." Competition is keen. Methods of approaching people must be carefully considered. The mails are flooded with circulars and letters.

The telephone is a means of approach that is not overdone. It means business of importance and it gets even better attention than a telegram. You talk direct to your prospects, give and receive full explanations, get an answer on the spot.

Call your dealers and salesmen every day or two. Give them some of your ginger. A telephone conversation is almost equal to a personal conference, and you know what a stimulus that is to business. You have a lot of out-of-town prospects who are just on the verge of buying. You can't get to them right now; you may be too busy; the roads may be bad. Telephone them. Make an appointment for a demonstration if you can't close at once.

The next sixty days is the biggest selling season of the year. Your "profit time" is here. Roads are open, the sun is shining, spring zephyrs are blowing, even Nature is doing her best to help you sell.

Your farm prospects are among your best ones—they have the money and are buying cars right now.

Every dealer should invest $5 to $10 a day during the next thirty days for telephoning; $150, yes, but what's that amount compared to the time saved, traveling expenses saved, and the profit on increased business?

This is the advice Mr. Hugh Chalmers is giving to his salesmen. It is the kind of advice our salesmen are giving to subscribers. It is not chance that put what is practically a telephone sales talk into the mouth of one of the ablest sales managers in this country. The principles enunciated at his suggestion in *Chalmers Monogram* are fundamental truths of salesmanship, and of all business to-day.

A Telephone Hero

WHEN little Edward's school teacher explained to his classmates that the reason for his being absent from school the previous afternoon was his having been called to talk by telephone to his uncle in New York City he became, if possible, more of a hero to them than Tom Sawyer was to his companions when he was given the enviable privilege of whitewashing the fence.

Many times, of course, had little Edward written to his uncle, Mr. Emil M. Scholz, Publisher of the New York *Evening Post*—who had visited him in Los Angeles six years ago—urging another visit, which, however, he did not know could be realized without his uncle's leaving his busy desk in the big city on the other side of the continent. Think of his really hearing his uncle's voice four thousand miles away! And just as distinctly as if he stood beside him. Truly that was a treat which does not come to many boys—and no doubt it has been writ large in the annals of little Edward Geldmacher's experiences, perhaps with a heading something like this, "A Telephone Message from the Sunset City to the Sunrise Country."

Edward Geldmacher
Los Angeles

Could a telephone message from Santa Claus himself have made a boy more a hero in the eyes of his little friends? Edward is aged ten years.

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Telephone Service for the Battleships

WHEN it was announced that the Atlantic Fleet would assemble in the Hudson River for a great naval review, the New York Telephone Company arranged for telephone accommodations for those on the ships, and their friends. Public telephones were installed on the piers at the foot of West 23d, 42d, 50th, 80th, 97th, 129th, and 158th streets, the official landings of the warships. Besides serving as regular public telephones these stations were used to receive messages for the officers and men on the ships. All the stations were, of course, attended, the size of the force varying from one day and one night attendant, to five day and three night attendants. Telephone messages received at the stations for those aboard the ships were carried by the attendants to the Beach Guard, who delivered them. At 50th street there was no Beach Guard, the submarines and their tenders, which were stationed there, being tied up alongside of the pier. It appears to have been somewhat hazardous for the attendant to try to reach the ships, lest he fall overboard. To avoid any mishap, arrangements were made with the officer in command of that division of the fleet providing that a signal flag be displayed at the station whenever enough messages had accumulated to warrant their being sent for.

Public Telephone Facilities at the Foot of West 97th Street

The largest installation was that at 97th street, where the traffic was heavier than at other points because of the greater number of ships using this landing. Two switchboards were used here, equipped with 9 trunk lines and 10 stations. There were also 3 coin box telephones in booths. At the 23d street and 50th street piers the installation consisted simply of 3 coin box telephones in booths, the demand for service here being lighter than at the other piers, which varied in the size of their equipment between the two extremes already described.

The public were well informed concerning the convenience thus placed at their disposal by an advertisement which was run in the New York and Brooklyn papers during the week of May 9, the first week of the fleet's stay in New York waters. "Just ask 'Information,'" it counseled, "for the number of the station nearest the ship you wish to reach, or call at any of our Commercial Offices and secure a list of the warships with the telephone numbers of the stations." A total of 3,064 calls came in to the Central Information Bureaus of the city, asking for this information.

Foot of West 158th Street. Typical Scene Around the Public Telephone Stations

The emergency value of the telephone installation for the battleships was demonstrated when a launch was struck by the People's Liner *Rensselaer* on its way to Albany. Five men, including Dock Superintendent Charles A. Manley, were thrown into the river from the launch. Dock Commissioner R. A. C. Smith and his party were just returning to the pier from the *Wyoming*, and Mr. Smith, seeing the accident in the river, scrambled ashore and telephoned to the Knickerbocker Hospital for an ambulance. The *Rensselaer* stopped and lowered a boat; a steamer from the *Wyoming* and Police Launch 4 hurried to the rescue, and the men were all brought safely ashore. When they reached the pier, a physician was already there to treat them and no serious harm appears to have resulted from the accident.

The telephone facilities and excellent service rendered were greatly appreciated by those for whose convenience it was provided, as the following note will indicate:

UNITED STATES ATLANTIC FLEET.
FOURTH DIVISION
U. S. S. LOUISIANA, FLAGSHIP

AT SEA, May 19, 1915.

The Manager, New York Telephone Co., New York City, N. Y.

MY DEAR SIR: Rear Admiral Walter McLean, Commander Fourth Division of the Atlantic Fleet, has directed me to thank you for the courtesy extended by your company in establishing, for the convenience of his command, a telephone station at the naval landing foot of 158th street during the recent visit of the fleet. Especially does the Admiral wish me to call to your attention the efficient manner in which this telephone station handled all business for his officers and men. In no case was there reported a message delayed in transmission or undelivered—the service rendered was ideal.

Very truly yours,
(Signed) W. A. GLASSFORD,
Lieutenant U. S. N., Flag Lieut.

The Line of Least Resistance

A FACETIOUS friend of ours who comments frivolously upon all things, tragic as well as of small importance, observed the other day that if the Kaiser having business of significance in Paris had only telephoned instead of trying to get there in person he might have accomplished more. Doubtless this idea has occurred to many other uninformed persons, but the answer to it is simple. War has been aptly described by General Sherman and others in fitting and not dissimilar terms, but we beg leave to remark that war hath no terrors equal to those of trying to get a long-distance 'phone message through on the Continent of Europe even in times of peace over Government-owned wires; and it occurs to us, therefore, that confronted by two means of getting Paris, the Kaiser chose the physical alternative, believing, doubtless, that he was approaching the culmination of his ambition along the lines of least resistance, or at least of lesser resistance.

JOHN KENDRICK BANGS in *Concerning Municipal Ownership.*

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The TREND of REGULATION

By J. L. Swayze, General Counsel

Fare Zones

THE Board of Public Utility Commissioners of New Jersey in the matter of Charles A. Nutting *et al. vs.* Public Service Railway Company, decided on April 27, 1915, held, among other things, that the length of a fare zone is merely one of many factors that must be taken into account in determining the reasonableness of fares, and that the mere fact that the rates complained of are in excess of rates for like distances under similar conditions in other neighboring places is not sufficient to justify a finding that the rates complained of are discriminatory.

Charge for Restoring Service Discontinued for Non-payment

THE Public Service Commission of Missouri on April 5, 1915, *in re* City of Joplin *vs.* Joplin Water Works Company, held that defendant's rule authorizing a charge for turning on water after it had been turned off for non-payment for service was reasonable and should be enforced.

Payment of Bill of Former Occupant of Premises

IN the matter of William Flemer, Inc., *vs.* West Orange Water Company, decided April 30, 1915, by the Board of Public Utility Commissioners of New Jersey, it appeared that complainant had purchased the property of a customer who was indebted to the water company for water supplied to said property and that the company had shut off the water and refused to turn it on until the account of said debtor had been paid, whereupon complainant paid said amount and appealed to the Commission for advice as to the right of the company to enforce such payment.

The Board held that said action of the company was unjustified and without warrant of law, but that the Board was without authority to order reparation and that restitution of the payment exacted could be compelled only through the courts.

Use of Profane and Obscene Language Justifies Discontinuance of Service

THE South Dakota Railroad Commission held on February 3, 1915, that the use of profane or obscene language over any telephone line within the State would justify the telephone company in discontinuing service until the matter could be investigated and otherwise satisfactorily adjusted.

Reduced Rates to Ministers of Religion

GOVERNOR Brumbaugh of Pennsylvania has vetoed the bill recently passed by the Legislature of that State which authorized special reduced and lower rates of transportation to ministers of religion, stating that such persons must, like all other citizens, conform to constitutional and statutory provisions and that they have no legal status other than that of citizens, and that under the constitution and the decisions of the courts, it is clearly intended to prohibit absolutely any undue or unreasonable discrimination between individuals and that no special concessions to anyone are permissible.

A Utility Cannot Require Its Competitor to Vary Its Rates

THE Public Utilities Commission of Kansas in the case of Melvern Telephone Company *vs.* Carbondale Telephone Company, decided March 9, 1915, held, among other things, that it is not within the province of one telephone company to complain as to the rates and practices of another telephone company operating in close proximity to it, or to require such neighboring company to vary its rates and practices; and that if a telephone company publishes reasonable rates and furnishes efficient and sufficient service to the public in the territory in which it operates, there can be no ground for just complaint against it by a competing company operating in adjacent territory.

Fraudulent Use of Service

THE Corporation Commission of Arizona *in re* standards for gas and electric service and rules to aid in securing payment for service, on March 19, 1915, held, among other things, that any utility supplying gas and electricity which detects the fraudulent use of its product by a consumer, may discontinue service to such consumer and need not reinstate it until the consumer shall pay to the utility an amount equal to the estimated cost of the commodity fraudulently used and an additional charge of $2 to cover extraordinary expense incidental thereto. It was further provided that the amount of gas or electricity so fraudulently used shall be determined by the utility from previous or subsequent meter readings or other proper data.

Protection from Competition

THE Idaho Public Utilities Commission, in deciding the application of the Beaver River Power and Light Company for a certificate of convenience and necessity in the City of Pocatello, held that the Southern Idaho Company, the present occupant of said city, has sufficient installation to support the present and future needs thereof; that its system extends all over the city, taking care of all demands of all citizens; that the reduction in rates offered by the applicant does not afford such a reduction as to warrant the Commission in permitting competition in the field and that, therefore, the application should be denied.

Payment of Percentage of Receipts to Municipality

THE Idaho Public Utilities Commission in the Beaver River Power and Light Company case, decided March 24, 1915, held, among other things, that a provision of an ordinance of the City of Pocatello which provided for the payment to the city of a certain percentage of the gross receipts of the applicant company was not one to be looked upon with favor, as there was no reason, either in justice or in equity, why the users of a commodity of a public utility should be required to pay such a rate as to enable the utility to pay a percentage of its gross receipts to the city to be used by the city for general purposes, and that if funds are needed by the city for such purposes a tax should be levied on all the property within the city's boundaries rather than by the imposition of such a provision upon the customers of the utility.

Flat Rates for Water Unjust

IT was held by the California Railroad Commission on March 21, 1915, in the case of East Bakersfield Improvement Association *vs.* Bakersfield Water Company that the basic principle of charging for water by the flat rate method was unjust, both to the consumer and to the utility, and that a method whereby the quantity used could be measured was the only fair and equitable method for the sale of water.

Abandonment of Service

IN the Washington Supreme Court in the case of Northern Pacific Company *vs.* State *et al.*, decided March 22, 1915 (147 Pac. Rep. 45), it is held, among other things, that a railroad company cannot abandon its duty to serve the public nor dispose of its real or personal property so as to cause a discontinuance of service, but that it is bound to maintain service, and incidentally, to maintain an organized entity necessarily consisting of equipment and operating property such as will make such public service possible.

Guarantee of Revenue as Prerequisite to Extension of Service

THE Board of Public Utility Commissioners of New Jersey, on complaint of Henry T. E. Tieman *vs.* Public Service Electric Company, decided on April 6, 1915, that while it was the duty of the company to furnish service without guarantee to take specific amounts thereof, to all customers located within the built-up portions of the municipalities in which it operates, said company was, nevertheless, justified in requiring suitable assurance of a definite revenue before extending its service to complainant's residence, which was located at some distance from the main streets of the community.

Switching Rates

RATES HIGHER THAN USUAL ARE JUSTIFIED WHEN SUBSCRIBERS ARE NOT NUMEROUS

THE Wisconsin Railroad Commission, in deciding Minong Telephone Company *vs.* Lake Shore Telephone Company on April 29, 1915, held, among other things, that while the proposed rate for switching was rather unusual in that it was somewhat higher than the rate usually charged for such service, it was justified because the only way that companies with a small number of telephones in use could obtain advantage of central office service appeared to be for them to pay a rate somewhat higher than that usually charged for such service in a well-developed community.

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Central Office Visits

By Henry Richmond, Bedford Commercial

DURING the past year the writer has had the pleasure of conducting many visitors through the Bedford central office, and has heard frequent expressions of grateful appreciation for the privilege and pleasure afforded them by the New York Telephone Company. Some of the most pleasant and satisfactory tours have been with the students of one of the leading commercial schools in Brooklyn, whose management has adopted the practice of sending its students who are about to graduate to one of our central offices to observe a telephone plant in operation, as a fitting and profitable finish to its course of studies. I have been impressed by the appreciation shown, the interest taken, and the intelligent questions asked by these young men and women. I am informed that, subsequent to these visits, the students are called upon to submit in writing, to the principal of the school, an essay or composition upon the operation of a central office plant. I have read many of the papers submitted, and some of them would certainly interest our plant and traffic experts. I have selected two for the readers of THE TELEPHONE REVIEW.

The wisdom of including these young people in our invitations to visit the central offices is obvious. They are about to enter active commercial life, and as a result of these visits they will go into business as enthusiastic friends and users of the telephone.

DEAR MR. HERRMANN:—

The visit, which you so kindly arranged for us, to the Bedford Telephone Exchange, was both profitable and enjoyable. It was very pleasant indeed to be conducted through the building to see the apparatus and watch the operators at work.

What impressed me most was to see before my very eyes how that great unknown force, electricity, has been harnessed by human brain and intelligence to perform work which has become a necessity to civilized nations.

Our guide, Mr. Richmond, first showed us the room where the cables, containing from six hundred to nine hundred pairs of wires each, are installed. We were all struck with the mathematical precision of the arrangement of these pipes.

Then we were shown the storage batteries and the dynamos. The dynamos, which are connected with outside current, furnish enough electricity to the batteries to enable them to run the plant for forty-eight hours in case of emergency.

Lastly we saw the wire chiefs and the operators at work. The wire chiefs are kept busy answering calls relative to telephones which are out of working order, and investigating the trouble. In the room where the operators are seated in two long rows one sees buttons light up and wires put in and wires pulled out every second, as the exchange is called up and the operator connects or disconnects the lines. This room is by far the most interesting in the whole building.

Besides these rooms there is a rest room as well as a lunch room. The rest room is spacious, light and airy and the color scheme is delightful. The carpet is of a rich shade of brown, as are also the chairs, rockers and tables, and the curtains. Green plants and white hangings give it a pleasing touch of color. This room is indeed a pleasant one in which to spend a few minutes reading or just resting.

I greatly enjoyed this visit, and I wish to thank you, Mr. Herrmann, for the opportunity you gave me to see how the work is carried on at the telephone exchange.

Yours respectfully,
BERTHA HELLMAN.

Mr. Charles Herrmann,
1297 *Fulton street, Brooklyn, N. Y.*

DEAR SIR:—

I wish to thank you for the enjoyable and very instructive morning spent in visiting the Telephone Building.

Little do we think when we go to the telephone and pick up the receiver to converse with some friend that behind that little instrument in our hands lies a mammoth system employing thousands of men and women and extending from coast to coast over this great country of ours.

Even now it seems very simple in all the main points. The grouping of hundreds of wires into cables which run through the great network of subways that interlace this city. Then, inside the building, the dividing of the cables and separating the pairs of wires into cable and call number groups, the testing wires and the bells, the dynamos which control the ringing of the bells, the switchboard with its many little lights and plug holes, all divided into numbered groups—all these things would take hours to explain by one better acquainted with the work than I. To me, however, the most vital and interesting part of this whole giant system is the invisible power, the electricity, which is the life, so to speak, of these many mute wires.

Thanking you again for the pleasant morning that all the class enjoyed so much, I am

Respectfully,
HELEN G. STOUVENEL.

On the Job While Off the Job

WHILE enjoying a good book and a quiet smoke one sultry day during his vacation, the Wise One, a telephone man, was suddenly aroused from his reverie by a shrill feminine shriek. Jumping to his feet he hastened in the direction whence it came and there he discovered the fair daughter of the hotel mistress had fallen from a tree where she had been gathering fruit and had sprained her ankle.

Having been instructed carefully in First Aid work, he constructed a rude set of splints out of some branches that were lying on the ground nearby and after binding up the injured member he carefully lifted the young lady and hurried to the house with her.

The housekeeper was an old fashioned lady who "didn't believe in these modern affairs" and hence was without telephone service.

However, it came to his mind that while taking his morning constitutional he had seen a Blue-Bell sign on a tree about a mile distant. Seizing his hat he rushed from the house. Returning he said, "The doctor will be here shortly."

Scarcely five minutes had passed before the sound of an auto proceeding at high speed, with cut-out open, heralded the approach of the physician. Stopping his machine in front of the house, he hustled in and after undoing the amateur binding, replaced it with the "real thing." He complimented the Wise One for his good work and after collecting his fee departed.

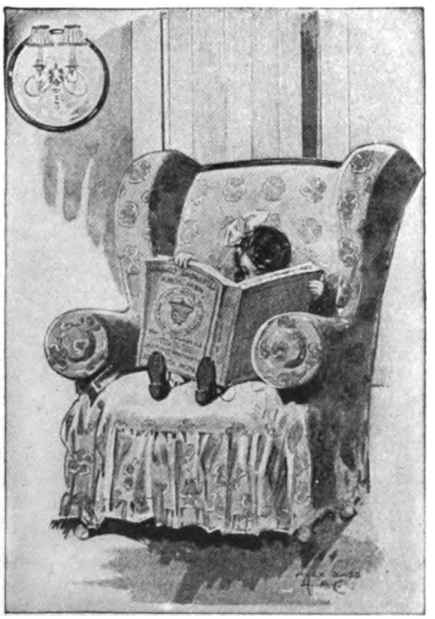
The grateful mother then came and taking the hand of the Wise One said, "How did you get the doctor so quickly?" "Oh!" said the Wise One, "by means of the telephone that was recently installed at Mrs. J ——'s down the road."

"I wish I had one," now hinted the housekeeper, whereupon the Wise One, seizing the opening for which he had been playing, produced a contract blank, which was signed without more ado.

After the telephone was installed, the summer boarders from nearby resorts came daily to use it, and some, to avoid the trouble, took rooms in "the house with the 'phone."

The Wise One went back to the city pleased with the idea of being "on the job, while off the job."

CHARLES R. McGUIRE,
Advertising Dept.



The Book-worm—*Life*

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Athletics

EMPLOYEES ARE INVITED TO SEND IN ACCOUNTS OF ALL ATHLETIC GAMES AND MEETS IN WHICH THEY PARTICIPATE, TOGETHER WITH PHOTOGRAPHS, IN ORDER THAT OUR REPORTS OF SUCH ACTIVITIES MAY BE MORE COMPLETE

At the Telaudit Club Outing

The Telaudit Club of the Accounting Department, Long Distance Lines Department, American Telephone and Telegraph Company

ON Saturday, June 5, 1915, The Telaudit Club of the Long Distance Lines Department of the American Telephone and Telegraph Company held their Third Annual Outing at the Staten Island Fair Grounds.

The baseball game between the Benedicts and Bachelors brought out talent for which the big leagues are scouting. Pitcher Arthur Rae started off for the Bachelors' team by trying unsuccessfully to drive an inshoot into Grimes's ribs. The failure was not due to lack of speed or control, but simply to the resistance of Grimes's insulation.

Pitcher Bill Elmendorf for the Benedict team commenced very nicely, but the Bachelors failed to appreciate his kindness and complained because but two passes were issued in the first inning.

The game ended with the Bachelors on the big end of an 18 to 8 score. This score, however, does not in any way describe the intense excitement that prevailed, due to the desire of the Bachelors to avenge their defeat of a year ago, at which time they filed a protest, claiming that there was collusion between the Benedicts and the scorekeeper, S. H. Marriott.

The baseball throwing contest for ladies brought out talent, good, bad, and indifferent. The winner, Mrs. F. L. Devereux, threw the ball 109 feet.

The ladies' football kicking event was a frost, undoubtedly due to the fact that the majority of the contenders were wives of the employees of the Accounting Department, and, as all of the male employees of that Department are moral husbands, their wives seldom have an opportunity to indulge in kicking practice.

Miss Lincoln evidently thought it was to be a race between the football and her pump. The pump covered the most ground.

Mrs. F. C. Rohwerder won the contest with a kick of 51 feet. Rohwerder should reform.

The fact that four of the men of the Accounting Department have been married within the last year, and three are about ready to hitch, apparently proves that the male members of our staff are desirable, from the ladies' standpoint.

The other events were a half-mile relay, a three-legged race and a tug-of-war, which were won as follows:

Half-mile race. Won by Benedicts—Elmendorf, Grimes, Sands, and Kohler; time, 1.57.

Three-legged race, 90 yards. Won by Dow and Wadsworth; time 11 4/5 seconds. Second, Keeler and Dayton.

Tug-of-war. Won by the Disbursement Department—Crossman, Keeler, Axtman, Wilkes, and Johnson.

The management of the Fair Grounds offered Anchor Big Bill Edwards of the Revenue Department tuggers (not the former Street Cleaning Commissioner) a permanent job if he would allow himself to be hitched up to a team and used as a plow.

"Casey" of the Revenue Department complains that the gateways in the fence around the track are entirely too narrow. He carried away half of the fence in endeavoring to negotiate a course from the clubhouse to the ball field. Casey says that if the management of the grounds claims damages for a new fence, he will file claim for a new suit.

The prize that was to be awarded to the finder of the Mushroom which accompanied the Roast Beef is still being held by the Prize Committee, awaiting claimant. Evidently the Hecker Club devoured the Carrots and Peas.

During the evening the guests enjoyed dancing, the feature of which was a lucky number drawing. The prize, a ladies' parasol, was won by Mrs. H. A. Sands.

"Sunset" League in Syracuse

THE members of the Telephone Athletic Association located in Syracuse have formed a "Sunset" Baseball League. This league consists of three teams, made up as follows:

Team No. 1, Captain Hartnett. Plant Department employees on the first floor of the Warren Building and outside of the Warren Building.

Team No. 2, Captain Wallace. Plant Department employees from the second, third, and fourth floors of the Warren Building.

Team No. 3, Captain Ziegler. Employees from the Auditing, Commercial and Traffic Departments.

One game is to be played each week during the months of June, July, and August, the games being played after 5 P.M. In the first game, played on Monday, June 7, Team No. 2 defeated Team No. 1 by a score of eight to six.

Telephone Club Outing

WHEN THE TELEPHONE REVIEW announced that the Telephone Club's annual field day would be held on June 12 at Schuetzen Park, Union Hill, N. J., it boldly made the claim that those who failed to attend would miss "the best time of their lives." If you don't believe the claim was proved ask the more than 8,000 people who turned out and made the day an event not soon to be forgotten.

It wasn't a field day; it was a big family party. Hundreds were there with their families and their friends and, after drifting carelessly through the crowds, it was evident that there were many of the latter present. You heard *her* say, in a whisper, of course, "Isn't he nice?" And you heard *him* say, "I want you to meet Miss ————." And as he said it he registered pride with startling clearness, especially if he stood where the sun could shine into his face.

And they came and brought their lunches, too. It was a warm afternoon, but none minded except the officials who rushed around straightening out mistakes, shouting directions, and feeling very much like ringmasters at a big four ring circus. Something was doing all the while. Some were rippling the waters of the park pond and heeding the warning from the shore, "Don't rock the boat." Others took things easily under the shade of the 236½ trees in the park, and still others kept nice and warm by cheering the athletes and being athletes themselves.

Of course, there was dancing, and apparently most every telephone man or woman or girl knows how to "trip the light fantastic," to use a time-worn expression hated by editors. And while Shannon's band was making harmonies which lured hundreds to the dance floor, another band stationed near the starting line was inspiring the athletes to their utmost endeavors on the track.

All in all, it was a big time. When the Telephone Club held its first field day at Celtic Park, Long Island City, the official attendance was 3,500 and the Club's officials felt satisfied. Last winter the Club enlivened the season by a set of indoor games at the 71st Regiment Armory, and 4,500 people turned out to cheer or to take part in the games. Then the Club officials felt pleased. But after the games at Schuetzen Park the Club's officials took stock and looked at each other in wonderment. They were tickled and they had a right to be, for they had successfully given an outing which had far more than the usual number of athletic events and had drawn a record-breaking attendance. The most important point to them, however, was that not

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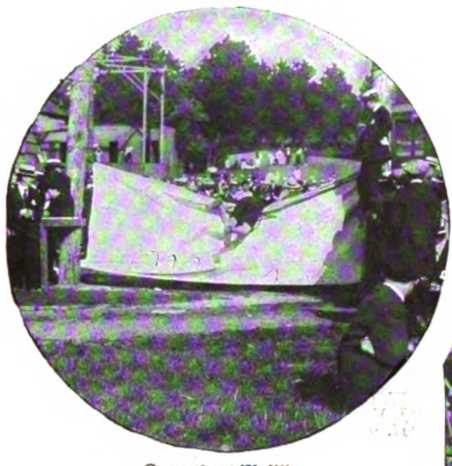
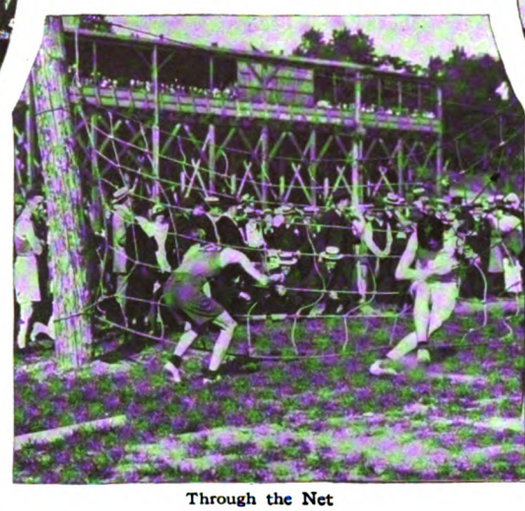
Racing on Stilts

One-mile Race

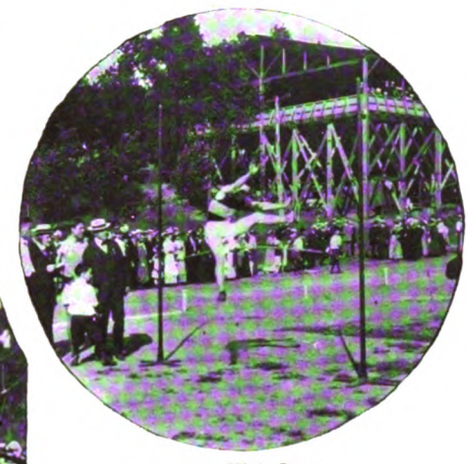
Going Through the Barrels



Over the "Wall"



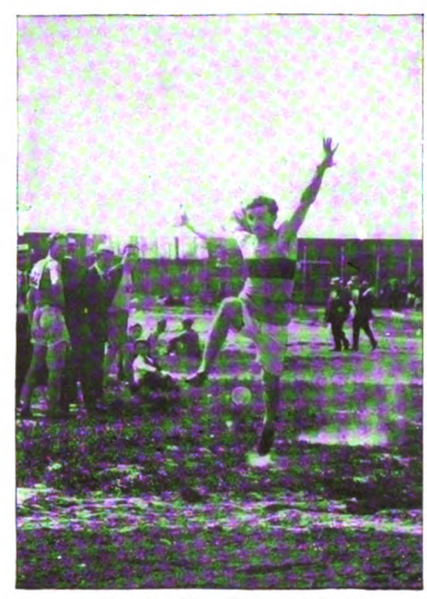
Through the Net



High Jump

Putting the Shot

Aerial Relay Race



Running Hop, Step and Jump

Finish of Fat Man's Race

Just a Few of the 8,000

AT THE TELEPHONE CLUB'S OUTING

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only were the twenty-seven field and track events keenly contested, but the interest was keener and the family spirit for which telephone gatherings are noted, in greater evidence than ever before.

Featuring the games were the novelty events which called into play qualities not usually required at an athletic meet. Seven teams of 4 men each entered the aerial relay race, which necessitated crawling hand over hand over 50 feet of wire suspended 10 feet from the ground, and the handline contest, favorite of the linemen, had 97 entries. Fourteen teams tested their brawn in the tug-of-war and the test was so stern that the spectators forgot that the Allies and the Germans were having some sort of an embroglio in Europe. Then there was the obstacle race, that produced the most laughs of the day, while second only to that was the barrel rolling contest. The leap-frog relay came in a good third in the competition for king of the smile-producers.

More than 100 sought to show skill in the golf approaching contest and those who failed to approach skill promptly blamed the "green" and thereby qualified as perfectly good golfers.

The New Jersey contingent came in special trolley cars and right here it should be mentioned that the Public Service Corporation of New Jersey is expert at coöperating, for it not only provided excellent service for the New Jersey division cohorts, but it carried the Long Island, Westchester, and Manhattan-Bronx crowds to the park in quick time, and took them back to their ferries with little delay.

The feature event of the track and field games was the 2,200 yards medley relay race with 7 teams of 4 men, running 220, 440, 660 and 880 yards in competition. Manhattan Plant was the winner, having a total handicap of 57 yards, and Buildings and Supplies finished second, with a total handicap of 10 yards.

Twenty-one men toed the line when the half-mile handicap was called. The men got away in good fashion, but O. G. Hunsdon of Manhattan Plant from a handicap mark of 45 yards was never headed, leading across the tape by 3 yards. The next 3 men, Francis Capelli, E. R. McLaughlin and Frank Flynn, the scratch man, fought out the prettiest finish of the day for places, finishing in the order named.

Another good race was the 660-yard novice, which was won by Gordon Mackenzie of the Public Telephone Department, who beat E. J. Kelly of Plant Accounting and J. George Patton of the New Jersey Plant Department by inches, Mackenzie coming through in the last 5 yards.

The 75-yard handicap resulted in a blanket finish. George Casey with a 6-foot handicap nosed out Henry C. Faber and James F. Ryan, who was scratch man. Ryan was crossed in his lane at 50 yards and thrown out of his stride. Ed. Emes was leading the field at 60 yards but pulled a tendon and was forced to pull up.

The summaries:

880-Yard Run Handicap

Won by O. G. Hunsdon, Plant Dept., Manhattan Division, 45 yards. Second, Francis Capelli, Plant Dept., Manhattan Division, 32 yards. Third, E. R. McLaughlin, Plant Dept., Manhattan Division, 20 yards. Time 2.05 1/5 seconds.

75-Yard Dash Novice

Won by Wm. F. Lynch, Plant New Jersey Division. Second, Henry Hall, Plant New Jersey Division. Third, Martin A. Daley, Installation New Jersey Division. Time 8 3/5 seconds.

75-Yard Dash Handicap

Won by Geo. Casey, Plant Manhattan Division, 6 feet. Second, Henry C. Faber, Plant, Manhattan Division, 3 feet. Third, Jas. F. Ryan, Buildings and Supplies, Manhattan, Scratch. Time, 8 seconds.

¼-Mile Walk Handicap

Won by John Gallagher, Plant, Manhattan Division, scratch. Second, Wm. H. Scott, Plant, Manhattan Division, 100 yards. Third, W. M. Marek, Plant, Manhattan Division, 110 yards. Time, 5 minutes 38 seconds.

Fat Man's Race, 50 Yards. For Men 200 Pounds and Over

Won by Frank J. Koehler, Plant, New Jersey Division. Second, F. H. Wessel, Plant, Manhattan Division. Third, Ed. H. McCloskey, Buildings and Supplies, Manhattan Division. Time, 7 seconds.

440-Yard Run Handicap

Won by F. Capelli, Manhattan Plant, 16 yards. Second, J. F. Ryan, Buildings and Supplies, 3 yards. Third, W. A. Wagner, Manhattan Plant, 4 yards. Time, 53 1/5 seconds.

Leap Frog Relay, 75 Yards

Won by Plant New Jersey Division, W. H. Arthurs, J. F. Fitzgerald, E. Freeder, H. Flood. Second, Plant New Jersey, E. Thornton, Carl Schongar, Alfred Hinckley, Frank Anderson. Time 20 4/5 seconds.

Special Leap Frog Relay, 75 Yards

Won by Equipment Long Island Division (F. Reid, J. Wilbur, F. Hollinger, C. Hoberg). Time 22 1/5 seconds.

One Mile Run Handicap

Won by Frank Ruggiero, Plant Manhattan Division, scratch. Second, Chas. T. Archer, Directory Dept. Manhattan Division, 35 yards. Third, Thos. A. Ferrier, Commercial, Manhattan Division, 130 yards. Time 4.42.

Sack Race, 75 Yards

Won by E. Sigler, Plant Accounting, Manhattan Division. Second, W. F. Lynch, Plant, New Jersey Division. Third, J. Barrett, Plant Manhattan Division. Time 16 seconds.

Office Boys' Relay—Interdepartmental 880 Yards

Won by Public Telephone Dept. Manhattan Division, (F. Daley, E. Trainor, W. Hilbert, H. Propheter). Second, Buildings and Supplies, Manhattan Division, (T. Thornton, J. McDonald, W. Roach, D. Karges). Time 1.52 seconds.

Obstacle Race

Won by A. G. MacLaughin, Accounting Long Island Division. Second, E. E. Thornton, New Jersey Plant. Third, Chas. Bortolucci, Plant Manhattan Division. Time 1.06 seconds.

660-Yard Run, Novice

Won by Gordon Mackenzie, Public Telephone Dept. Manhattan Division. Second, Edw. J. Kelly, Plant Accounting Manhattan Division. Third, J. Geo. Patton, Plant Dept. New Jersey Division. Time 1.33 seconds.

2,200-Yard Medley Relay Handicap Interdepartmental 880, 220, 660 and 440 Yards

Won by Plant Manhattan Division, (F. Ruggiero, W. Faber, O. G. Hunsdon, W. Wagner), 57 yards. Second, Buildings and Supplies, (Frank Flynn, R. R. MacCullough, T. McLoughin, J. Ryan), 10 yards. Time 4.46 2/5 seconds.

FIELD EVENTS

Aerial Relay

Won by Plant Dept., New Jersey Division, H. Eich, A. E. Spencer, J. Cassell, D. B. Neilson. Time 1.49 1/5 seconds. Second, Equipment Dept. Long Island Division (J. Wilbur, F. Reid, J. Miller, F. Rogers). Time 1.50 seconds.

Hand Line Contest

Won by Michael Comerford, Plant New Jersey. Second, W. Mulvey, Plant New Jersey Division. Third, John Hannan, Plant New Jersey Division.

12-Pound Shot Handicap

Won by Thos. Quigley, Plant Long Island Division (51½ feet) distance 46 feet, 7 inches; second, F. Gude, Plant Manhattan Division (4 feet) 44 feet, 8½ inches; third, Henry C. Faber, Plant Manhattan Division (5 feet) 43 feet, 7 inches.

Running Hop, Skip and Jump

Won by Ed. L. Emes, Auditing, Manhattan Division, 38 feet, 6 inches; second, Harold F. Rohrig, Plant, Manhattan Division, 37 feet, 5 inches; third, W. F. Carroll, Jr., Plant Manhattan Division, 37 feet, 3½ inches.

Tug of War

Won by Plant, Western Division (G. Johnson, No. 1, G. Johnson No. 2, A. Lang, H. Hess, R. Coleman). 2d, Plant, Western Division (S. I. McDonald, M. C. Hebb, H. Fehsal, B. McCarthy, W. Basler).

Running High Jump Handicap

Won by Jos. Johannes, Plant, Manhattan (scratch) 5 feet, 5 inches; second, A. L. Mamel, Plant, Manhattan Division (5 inches) 5 feet, 4½ inches; third, C. T. Brady, Plant, New Jersey (3 inches) 5 feet, 4 inches.

Baseball Throwing for Distance

Won by Jos. Lewis, Plant, Long Island Division, 273 feet; second, Frank Bellavigna, Plant, Westchester Division, 362 feet; third, Thos. Quigley, Plant, Long Island Division, 261 feet.

Soccer Football Kicking for Distance

Won by Ludlow P. Strong, Commercial Engineer, Manhattan Division, 137 feet, 9 inches; second, Bob Shaw, Buildings and Supplies, Manhattan Division, 136 feet, 5 inches; third, J. J. McGuire, Plant, Long Island Division, 135 feet.

Barrel Rolling Contest

Won by F. L. Reed, Plant, Long Island Division; second, R. J. Conway, Plant, Long Island Division; third, F. R. Voges, Plant, Long Island Division. Time 15 seconds.

Baseball Relay

Won by Installation Department, Manhattan Division, J. Weber, W. Groot, R. Edwards, A. Totten, P. Flynn, F. Weiss, J. Michael, J. McCall, G. Larie.

The Golf Approaching Contest attracted a large number of contestants and 104 entries were received, some of which represented more than one try by a contestant, as each was privileged to play three times in accordance with the rules.

The first prize was won by G. C. Tompkins, with a total score of 10. There were three tied at 9 for the second and third prizes.

D. Holt won the second prize in the play-off.

P. T. Salisbury finished third.

The Match Basketball game resulted in a win for the picked team from New York over the Newark Plant by the one-sided score of 46 to 18. The winning team:

W. Groot, R. F., Plant
J. Van Doehren, L. F. (Capt.), Plant
H. R. Menefee, C., Plant
J. A. Flemming, R. G., Plant
W. S. Carroll, L. G., Plant
E. M. Sweeney, Sub., Commercial

The Burlesque Game resulted in a victory for the Night Force over the Installation, the score of which was 22 to 6. The Night Force team was as follows:

L. M. Allen, R. F., Plant
M. C. G. Arrabrandt, L. F. (Capt.), Plant
E. J. Hughes, C., Plant
H. Earl, R. G., Plant
J. A. Quinn, L. G., Plant
E. W. Jones, Sub., Plant

In the Individual Goal Throwing for Accuracy, first, second, and third prizes were drawn down by Messrs. Hawley, Powers, and Sproule.

The Individual Obstacle Goal Throwing resulted in a victory for George Esler, with H. F. Stevens second, and W. Hammerli third.

Golf Match Between New York Telephone Company and American Telephone & Telegraph Company

ON May 23, two teams of sixteen men each from the New York Telephone Company and the American Telephone & Telegraph Company played a golf match on the course of the Gedney Farms Country Club at White Plains. The match was played on the "Nassau System"—one point for each nine holes and one point for the match.

The New York Telephone Company team won by 20 points to 16. The provisions of the match were that the losing team pay for the dinners of the winning team at the Gedney Farms Hotel.

The names of the contestants and the scores appear below:

New York Telephone Company		American Telephone & Telegraph Company	
Penn	3	Green	0
Rennard	0	Hill	0
Smith	1	Rehwalt	0
Lawrence	3	Hadlock, C. H.	0
Honeyman	3	Church	0
Kavanagh	0	Hadlock, C. W.	3
Daumont	2	Forbes	0
Conaty	2	McClelland	0
Carroll	0	Denico	3
Fisher	0	Farrar	3
Congdon	3	Berry	0
Heath	0	Peterson	3
Shearer	1	Tyler	0
Orth	0	Morse	1
Mittelsdorf	2	Miller	0
Whittaker	0	Moriarty	3
	20		16

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NEW YORK TELEPHONE COMPANY

GENERAL OFFICES, 15 DEY ST., NEW YORK

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F. H. BETHELL, Vice-President
H. F. THURBER, Vice-President
FORD HUNTINGTON, Vice-President
WALTER BROWN, Secretary & Treasurer
J. L. SWAYZE, General Counsel
C. T. RUSSELL, General Solicitor
R. V. MARYE, General Attorney

J. A. STEWART, General Manager
J. S. WILEY, General Auditor
E. F. SHERWOOD, Chief Engineer
H. C. CARPENTER, Engineer
T. P. SYLVAN, Asst. to Vice-President
E. A. GURNEE, Asst. Treasurer
WALDRON HOPPINS, Asst. Secretary
J. S. KENNEDY, Secretary, Employees Benefit Fund Committee.

COMMERCIAL DEPT.

J. S. McCULLOH
General Com'l Supt.
15 Dey Street

W. F. BAKER
Metropolitan Manager
15 Dey Street

A. D. WELCH
General Com'l Engineer
15 Dey Street

R. S. SCARBURGH
Advertising Manager
15 Dey Street

J. LENIHAN
Collection Attorney
24 Walker Street

PLANT DEPT.

G. C. ALLEN
General Supt. Plant
15 Dey Street

A. W. ALLEN
Supt. Buildings & Supplies
15 Dey Street

J. C. RENNARD
Real Estate Manager
15 Dey Street

W. T. GURNEE
Plant Accountant
15 Dey Street

TRAFFIC DEPT.

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General Supt. Traffic
15 Dey Street

R. H. BOGGS
Traffic Engineer
15 Dey Street

H. G. GREENE
Manager Public Telephones
24 Walker Street

A. D. SCOVEL
Mgr. Traf. Inspection, M-B
58 W. Houston Street

ACCOUNTING DEPT.

P. O. COFFIN
Auditor
15 Dey Street

J. A. KENNEDY
Auditor of Disbursements
15 Dey Street

A. J. NORMAN
Auditor of Receipts
15 Dey Street

C. H. GROVER
Supervisor of Methods
15 Dey Street

Manhattan-Bronx	*Manhattan-Bronx*	*Manhattan-Bronx*	*Lower Manhattan*
J. R. POLLOCK	BURCH FORAKER	H. J. SCHULTZ	L. F. HALSTED
Division Com'l Manager	Division Plant Supt.	Division Supt. Traffic	Division Auditor Receipts
15 Dey Street	24 Walker Street	15 Dey Street	221 E. 37th Street
Westchester	*Westchester*	*Westchester*	*Westchester & Upper M.-B.*
H. L. PALMER	BURCH FORAKER	M. H. ORTH	E. A. GIRARD
Division Com'l Manager	Division Plant Supt.	Division Supt. Traffic	Division Auditor Receipts
22 W. First Street	24 Walker Street	40 South Fifth Ave.	2033 Fifth Avenue
Mt. Vernon	New York	Mt. Vernon	New York
Long Island	*Long Island*	*Long Island*	*Long Island*
H. W. DRAKE	P. D. HONEYMAN	G. L. YATES	A. W. DEAS
Division Com'l Manager	Division Plant Supt.	Division Supt. Traffic	Division Auditor Receipts
81 Willoughby Street	547 Clinton Avenue	81 Willoughby Street	81 Willoughby Street
Brooklyn	Brooklyn	Brooklyn	Brooklyn
New Jersey	*New Jersey*	*New Jersey*	*New Jersey*
H. G. KERR	I. J. THORP	G. H. MERRILL	C. H. LEONARD
Division Com'l Manager	Division Plant Supt.	Division Supt. Traffic	Division Auditor Receipts
281 Washington Street	281 Washington Street	281 Washington Street	281 Washington Street
Newark	Newark	Newark	Newark
Hudson	*Hudson*	*Hudson*	*Hudson*
J. A. JAMISON, Jr.	E. H. POWLEY	E. G. ANDERSON	J. P. HILL
Division Gen'l Manager	Division Plant Supt.	Division Supt. Traffic	Division Auditor Receipts
74 Chapel Street	74 Chapel Street	74 Chapel Street	Telephone Building
Albany	Albany	Albany	Albany
Central	*Central*	*Central*	*Central*
D. C. COX	F. J. CHESTERMAN	H. H. KENNEDY	L. A. WILCOX
Division Gen'l Manager	Division Plant Supt.	Division Supt. Traffic	Division Auditor Receipts
321 Montgomery Street	321 Montgomery Street	321 Montgomery Street	321 Montgomery Street
Syracuse	Syracuse	Syracuse	Syracuse
Western	*Western*	*Western*	*Western*
C. A. SPAULDING	P. O. JACOBS	J. J. WELCH	H. W. GAUL
Division Com'l Manager	Division Plant Supt.	Division Supt. Traffic	Division Auditor Receipts
Telephone Building	Telephone Building	Telephone Building	Telephone Building
Buffalo	Buffalo	Buffalo	Buffalo

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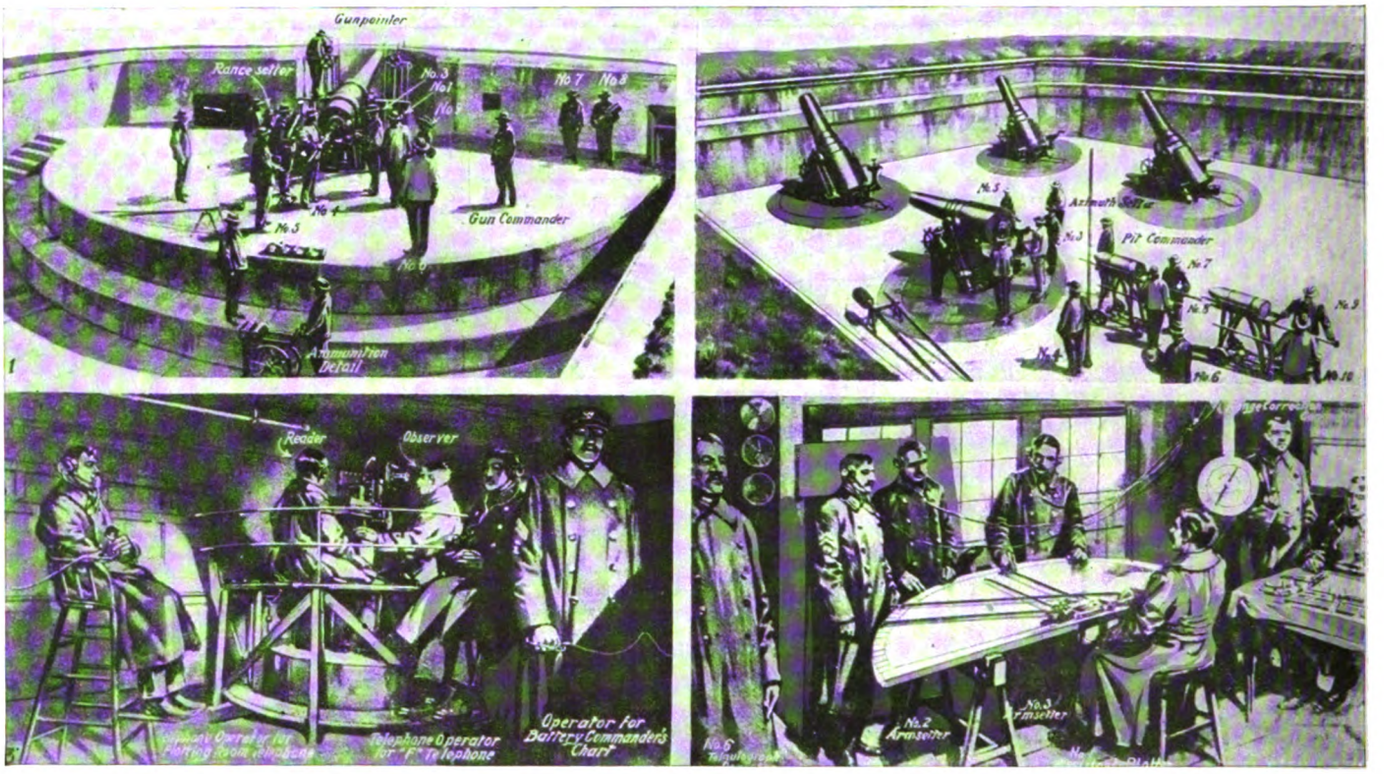
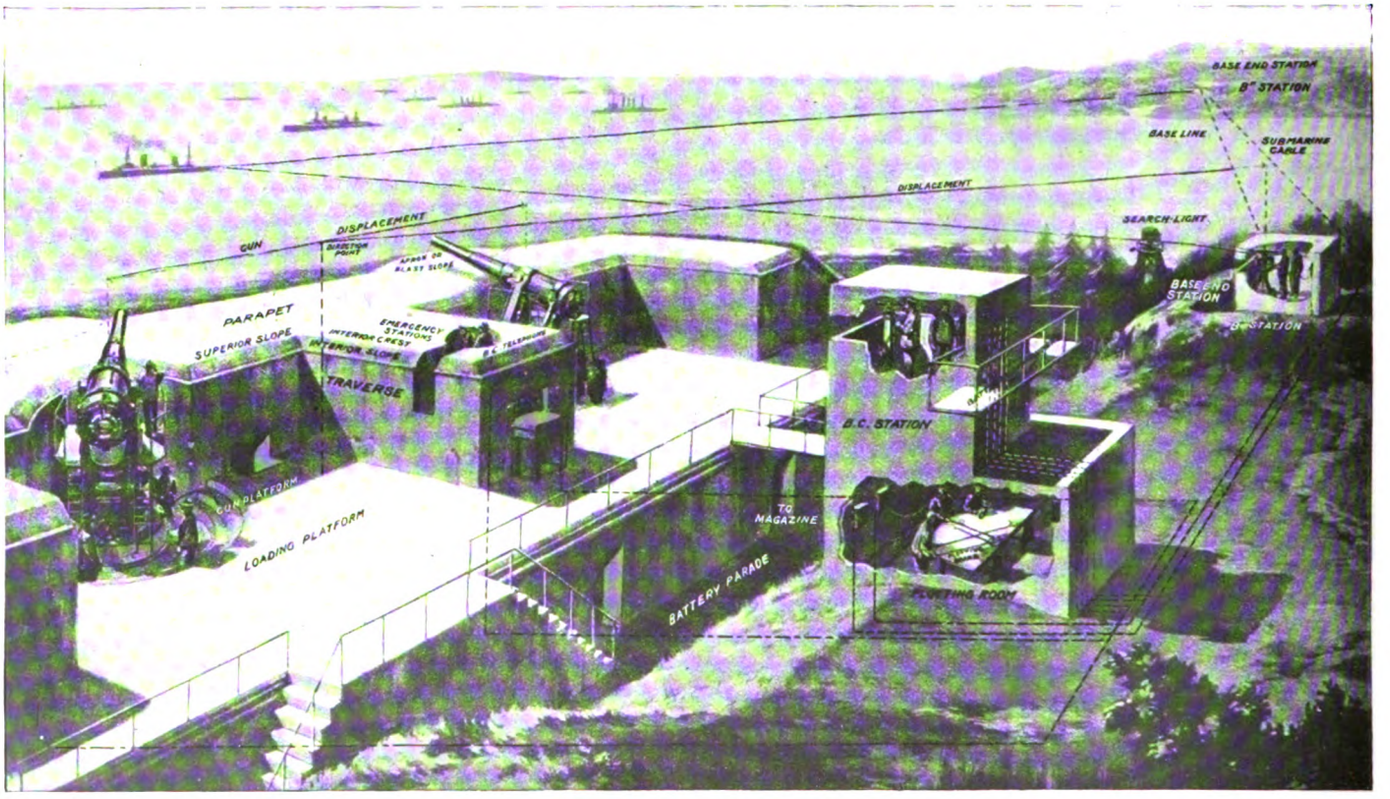


WAR BETWEEN LAND FORCES AND SEA FORCES. THE SCIENTIFIC METHOD OF WORKING MODERN COAST DEFENSE ARTILLERY

These illustrations of some methods employed in coast defense are of particular interest. Drawing No. 1 shows a disappearing rapid-fire gun in an American fort, with the men in their positions at the command, "Load!" This gun fires more rapidly than the 6 inch barbette type. No. 2 shows one of the pits of a 12 inch mortar battery, and the men's position at the command, "Posts!" No. 3 shows a range-finding room, with the observer at work and the telephone in use. No. 4 shows the plotting-room, with men at work finding the "predicted range" which is communicated to the guns of the battery with the "predicted time." (Drawn by H. W. Koekkoek from Photographs in the *Scientific American.*)

From *The Illustrated War News*



MODERN COAST DEFENSE: HOW AN UP-TO-DATE SHORE BATTERY WORKS ON MATHEMATICAL LINES AGAINST AN ENEMY'S FLEET

The leading hostile warship having been sighted, its position is found by observing the angles the ship makes at two observing stations, B1 and B2, situated at the end of a common base-line of known length. These angles are telephoned to the plotting-room, where the position of the ship is found. From the plotting-room the proper elevation, etc., is telephoned to the gun. All the fire-control instruments and stations are located at obscure places in the fort reservation, and are amply protected by parapets of earth and concrete. They are connected with each other by underground telephone, telautograph, or speaking-tube. The "predicted range" is sent to the guns, and the "predicted time" is given by a bell. (Drawn by H. W. Koekkoek from Photographs in the *Scientific American.*)

From *The Illustrated War News*

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The TELEPHONE REVIEW

August
1915
VOL. 6
NO. 8

"BEYOND THE NIGHT, ACROSS THE DAY"—
THIS BUILDING STANDS FOR SERVICE

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MISS NELLIE L. WESTOVER
Manager of Operators' School, Central Division
Whose character and loyalty to the Company's ideals are a constant inspiration to students and operators

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The TELEPHONE REVIEW

VOLUME·6· NUMBER·8

NEW YORK
AUGUST
1915

The TELEPHONE REVIEW
J. D. NEWMAN, Editor.

Published monthly by the New York Telephone Company. U. N. BETHELL, President; WALTER BROWN, Secretary and Treasurer. Publication Office and Principal Place of Business, 15 Dey Street, New York.

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VOL. VI. AUGUST, 1915 No. 8

Good Citizens

WHILE we are all good telephone employees, we must not forget that this embodies being good citizens. We could not be good telephone employees if we were not good citizens, although all good citizens, of course, are not telephone employees; but most of them are telephone users, and this makes almost everybody related.

As good citizens we owe our country a duty, and it does not matter whether there is a war in Europe or not, we must perform it. We have a habit of performing our telephone duties, but do we perform the duties of citizenship as well?

Mr. F. H. Bethell was recently elected the first president of the newly incorporated Village of Scarsdale, and as its chief executive he delivered a Fourth of July oration in accepting a flag and flagstaff presented by the people of the village. The title of his address was "America, the Noble," and we print it in this issue, as reading it will make us all better citizens, better Americans.

We also print some pictures of the village. Nature has done much, but it has been the art and skill of good citizens which have made Scarsdale one of the most beautiful and desirable of New York City's suburbs.

Making a Telephone Magazine

THE change in the date of publication of THE TELEPHONE REVIEW to the first of each month has made it necessary for all articles and photographs to reach the editor not later than the tenth of the month preceding the issue for which they are intended.

When we were asked recently why it is necessary to have two-thirds of a month in which to get out the magazine, we answered as follows, and it was at once suggested that we print this schedule, as others might also be interested: Taking our July issue as an example—our printers required us to send them not later than Friday, June 18, and as much earlier as possible, all of the makeup of the magazine complete, including all cuts, all captions therefor, and all read and corrected galley proofs. Between the tenth and the eighteenth there were six and a half days, excluding Saturday half-holiday and Sunday, during which time every piece of copy received on our closing date had to be edited and set up in type, and all photographs had to be measured and cuts made; all proofs had to be read, corrected, and corrected proofs submitted; from the material in hand the contents of the July issue had to be selected, and the matter and illustrations had to be pasted up in the form of what is called a "dummy," from which the printers would be able to arrange their type and cuts into pages as they would appear when printed in the magazine. The preparation of copy for the printer includes not only the selection of the articles, but sometimes the entire rewriting of them; many of our contributors take us at our word, and merely furnish us the information from which we are to write the articles.

At noon on Monday, June 21, the printer was scheduled to give us a complete set of page proofs, to be submitted for official approval. Two days were allowed us for this, the proofs having to be returned to the printer at 12 o'clock noon, Wednesday, the twenty-third, O. K. for the press. The printing, binding, wrapping, and shipping of 36,000 copies of the magazine required until the afternoon of the thirtieth.

The limited amount of space in the magazine does not permit us to use all the material which we receive intended for any issue, and we are constantly carrying from month to month a considerable amount of what the printers term "overmatter," which we endeavor to use as soon as possible. Preference is always given to matters of timely interest and the quality of the material in hand also determines what will be used.

It is our earnest effort to use in each issue all the contributions possible, but we endeavor to maintain an even balance between departments, which, again, frequently determines the availability of a particular article for a particular issue.

There are many other things about getting out the magazine which it might be interesting to explain, but the foregoing will, perhaps, be sufficient to make clear some of the principal elements which our readers have not heretofore understood.

Every employee is presumably interested in matters regarding the welfare, the progress, and the success of the Company, and contributions of this character will continue to be of benefit to the Company as a whole and all of its employees, including those who write them, as in the past.

Exceptions to Rules

A CONTRIBUTOR sends us an article discussing the question of "when it is advisable to make exceptions to rules," and proposing that something in the nature of a routine be adopted, so that subordinates will be able to make such exceptions in the absence of their superiors. Our contributor overlooked the fact that to follow his suggestion would be equivalent to establishing two sets of rules, and that to establish a set of rules covering all possible exceptions to other rules would be an impossibility. He also overlooks the fact that the authority to make exceptions to rules is vested in officials who hold their positions because of their knowledge and experience in the business, and because they know how the rules can be carried out, when subordinates might think it necessary to make exceptions to them.

There are even more important reasons, however, against what we might term "standardizing exceptions to rules," which seem not to have occurred to our correspondent, and these reasons all

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relate to the underlying principles which have been embodied in the rules as they exist.

Rules are made, as the result of knowledge and experience, for the purpose of transacting business in the most systematic, uniform, efficient, and economical manner.

1. Systematic. This covers the method and prevents disorder, confusion, discord, and irregularity in the performance of what is to be done.

2. Uniformity. This establishes a systematic method wherever the rule is applicable.

3. Efficiency. This puts at the disposal of the employee the means whereby his ability will find its highest expression in the performance of his duties.

4. Economy. This is a word which is often misunderstood. Ruskin's definition is: "Economy no more means saving money than it means spending money. It means, the administration of a house; its stewardship; spending or saving, that is, whether money or time, or anything else, to the best possible advantage."

There is nothing in the duties any of us have to perform, in the objects of the company, or in its relations with the public, that is not covered by these four words, which, as stated, constitute the purpose of rules.

Exceptions which would defeat its purpose cannot be made to any rule, but since no rule can cover every contingency, it is sometimes necessary to make exceptions which will meet exceptional conditions.

Rules being the result of knowledge and experience, they are also subject to change as the result of increasing knowledge and experience.

Both with reference to rules and their exceptions, it is well to bear in mind what Pascal wrote:

"It is a great mistake to follow the exception, instead of the rule. We must show ourselves strict, and opposed to the exception. But yet, as there is no doubt but there are exceptions to every rule, we must decide with strictness, though with justice."

As we go to press we are inexpressibly shocked by the news of the awful calamity which occurred in Chicago on July 24.

To our bereaved co-workers we offer our profound sympathy.

Our "Insert" This Month

AMONG those who actively and enthusiastically participated in the historic event of the opening of the Transcontinental Telephone Line on January 25, 1915, was Mr. Fred B. Appleget, now of the Baltimore *News*. While so engaged he learned to know Dr. Carty and to appreciate his brilliant genius; when the wonderful success of the demonstration proved the towering magnitude and importance of the achievement, Mr. Appleget was inspired to write a poem in tribute to the Transcontinental Line, which he dedicated to Dr. Carty.

This poem was sent to THE TELEPHONE REVIEW, and when received, its classical quality and its high conception of what the Transcontinental means to science and to the people as a whole, were at once recognized.

After looking some time for an artist who could give the poem an appropriate setting, we found Mr. Francis William Vreeland, a member of the National Society of Mural Painters. The allegorical feeling in the poem being exactly in line with the type represented in the best of mural paintings, the symbolic design conceived and executed by Mr. Vreeland is in perfect harmony with the poem by Mr. Appleget, and thus we have a consistent combination of poetry and art.

We inclose a reproduction, suitable for framing, as an insert with each copy of THE TELEPHONE REVIEW this month.

The poem reads as follows:

The Transcontinental

LO, Science waves her wand, and silently
A magic web is spun from sea to sea.
The States crowd close together, as at night
A family clusters round the fireside's light.
From coast to coast, the winged words are sent—
Friend jests with friend across a continent;
Flashed over mountains, crossing deserts wild,
The mother hears the whisper of her child.
The fair-haired Goddess of the Golden Gate
Wafts welcome to the East's remotest State,
And, standing on the far Pacific's shore,
Hears the Atlantic's mighty waters roar.

FRED B. APPLEGET.

Pioneers' Transcontinental Trip

AS announced last month the Pioneers will have a most interesting trip, seeing a great deal of the United States on their way to the convention which is to be held this year in San Francisco. All Pioneers who wish to enjoy this unusual opportunity will be given extra vacation. The trip includes visits to Omaha, Denver, Colorado Springs, Salt Lake City, Del Monte, Santa Barbara, Los Angeles, San Diego, San Francisco and the Grand Canon. Not only is this remarkable opportunity to see some of the most beautiful parts of our country afforded to the Pioneers, but employees of the Bell System, whether Pioneers or not, are entitled to take advantage of the trip.

Service

WE have stolen a line from Tennyson as part of the title to our cover design this month. The picture is a reproduction of a very unusual photograph showing our Albany building illuminated at night. What could be more fitting for a title and more true in reality than to say:

"Beyond the night, across the day"—
This building stands for Service.

This can be said of all our buildings, and our very Company itself—the whole Bell System in fact.

There is not an hour, there is not an instant, day or night, in the years as they roll by, when the Bell System is not available throughout the length and breadth of this country to anyone who wants to make a call, and always the alert and intelligent operator is both medium and guardian with her cheery, "Number, please." This is the service which the public knows best, but our operating force is only a part of the enormous organization of the Bell System, all of which is devoted to the public service, and it is necessary that buildings be provided where the traffic, plant, accounting, commercial and all the other various activities of the business, may be conducted. These buildings also are therefore dedicated to the service of the public.

The Albany building is one of the handsomest and best equipped in that city, and critics have declared it to be unsurpassed by any in the country.

A Letter

Jersey City, July 2, 1915.

J. D. Newman, 18 Cortlandt street, New York City.

DEAR SIR: Although I am not a subscriber of the New York Telephone Company, I am a constant user of the Bell System.

On May 31 and June 26 I had occasion to use the telephone, one call of which was Telephone Official. The coin apparatus being out of order, the call girl acted very courteous and painstaking, took my name and address, and I have received refunds.

Considering the time, trouble and expense the Company is put to accomplish this act of courtesy, or service, I think it behooves me to compliment your Company.

If you wish, you may quote me in the August issue of THE TELEPHONE REVIEW as having said that I find the New York Telephone Company a very efficient and praiseworthy concern and just so long as they keep up to their present standards they need not be government-owned.

Wishing the New York Telephone the best of progress, I am very truly yours,

(Signed) N. D. WYCHOFF.

Grin!

The "Voice With the Smile" is the one that's worth while.
It's the one that's sure to win;
And when things look blue, perhaps the fault is just you,—
So forget all your troubles and grin!

ROCHESTER MAIN.

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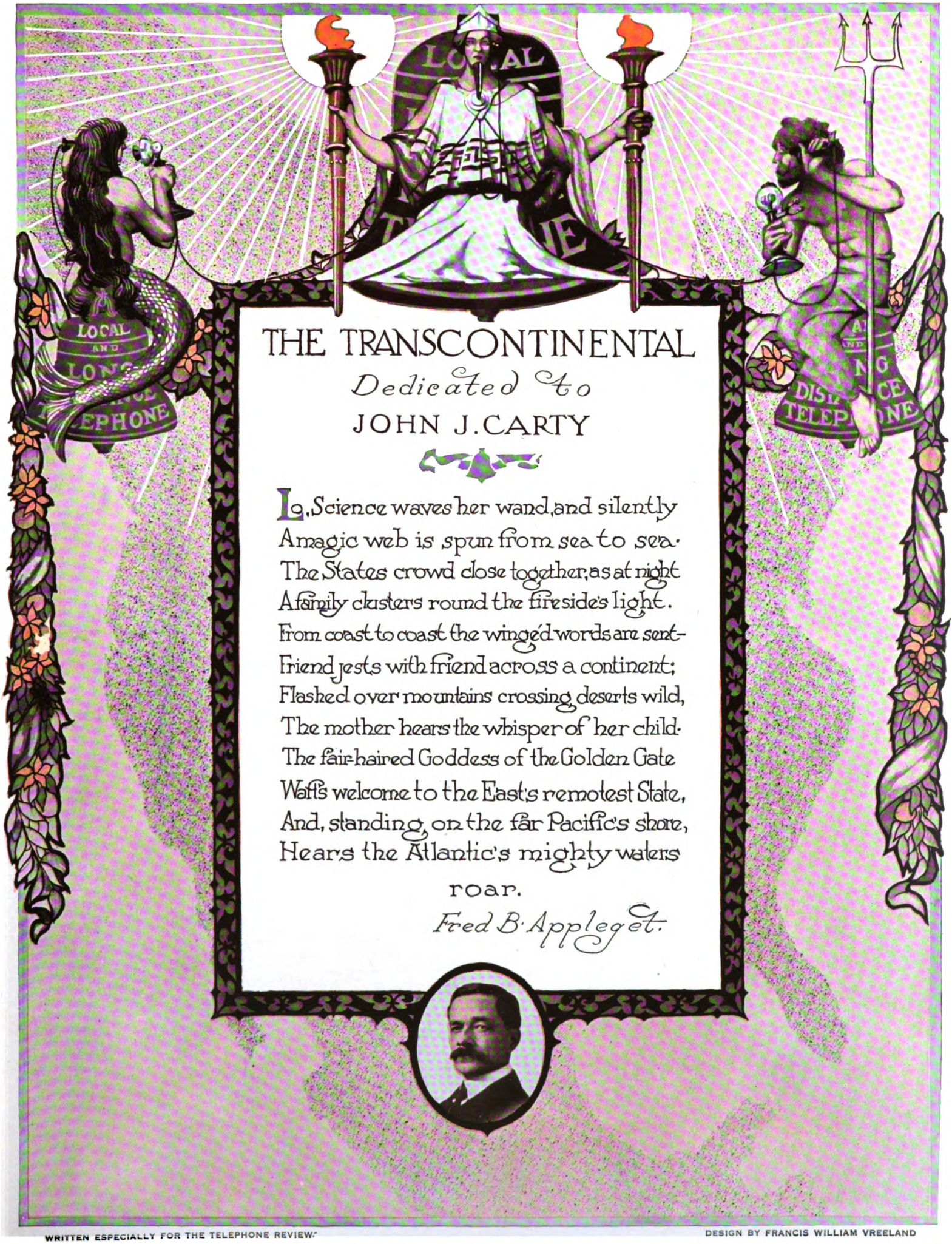

THE TRANSCONTINENTAL

Dedicated to

JOHN J. CARTY

Lo, Science waves her wand, and silently
A magic web is spun from sea to sea.
The States crowd close together, as at night
A family clusters round the fireside's light.
From coast to coast the winged words are sent—
Friend jests with friend across a continent;
Flashed over mountains crossing deserts wild,
The mother hears the whisper of her child.
The fair-haired Goddess of the Golden Gate
Wafts welcome to the East's remotest State,
And, standing on the far Pacific's shore,
Hears the Atlantic's mighty waters
roar.

Fred B. Appleget.

WRITTEN ESPECIALLY FOR THE TELEPHONE REVIEW.

DESIGN BY FRANCIS WILLIAM VREELAND

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A Prophet in His Own Country

F. H. BETHELL

WHEN a man who is president of eight corporations and vice-president of several more, becomes chief executive in still another organization, his elevation warrants more than passing notice. When his latest distinction comes at the hands of his neighbors and fellow townspeople we recognize an exception to that old Biblical truism that concerns itself with the reputation enjoyed by a prophet in his own bailiwick.

If you will get out your copy of the revised gazetteer of Westchester County, New York, you will find this paragraph well toward the front cover of the book:

SCARSDALE—Village of the third class, twenty miles from New York, on the Bronx River, and the electrified N. Y. Central Pop. 2,700. One of the highest class residence communities in the most beautiful sections of Westchester County.

Two months ago the good people of Scarsdale decided the place had been a mere hamlet long enough. Its growing size and importance and the increasing complexity of community affairs demanded that Scarsdale be incorporated into a village. When a tri-partisan committee met to nominate the village officers, Mr. Frank Hopkins Bethell, in charge of the Eastern Group of Bell Telephone Companies, was placed at the head of the ticket. The ticket just missed being swept into office unanimously.

The new village president made his first formal appearance before his neighbors on the Fourth of July, on the occasion of an old-fashioned, safe-and-sane, Independence Day celebration, held on the village green. Patriotic songs were sung, the band played, the Declaration of Independence was read, a flag and pole presented to the village by public subscription were dedicated; a cannon salute was fired as a little Miss, a descendant of one of Washington's generals and of a signer of the Declaration of Independence, raised the flag; the Boy Scouts and the veterans marched, and several patriotic addresses were delivered.

Mr. Bethell's address, "America, the Noble," came near the close of the day. The setting was both beautiful and inspiring. Mr. Bethell stood on an improvised dais, draped with flags and bunting. Behind him, in a semicircle, were seated the village fathers and distinguished sons. Before him, on the lawn, were ranged over five hundred of the people of Scarsdale, fringed by a score of automobiles, closely parked. Above all, the newly dedicated flag waved lazily in the late afternoon breeze.

Mr. Bethell said in part:

"America, the Noble"

IN addressing myself to the subject, "America, the Noble," I am impressed with the thought that to see what is noble in America one has but to look about him. The character of our people, reflected as it is in our institutions, is in the truest sense noble. A nation is what its people make it, and ours is a noble nation because of the character of its citizenship. All over these

The Flag Raised by Miss Louise Gunning, a Descendant of Major William Popham of General Washington's Staff and a Resident of Scarsdale, and also of Lewis Morris, a Signer of the Declaration of Independence

Independence Day Celebration at Scarsdale

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New York Telephone Company Central Office Building, Scarsdale

United States our countrymen are, on this day, thinking of Country—the land of birth or of adoption—Americans all—celebrating with pardonable pride the birthday of a noble nation; a simple people, a democratic people, a home-loving people, a country-loving people, patriotic, noble citizens of the United States.

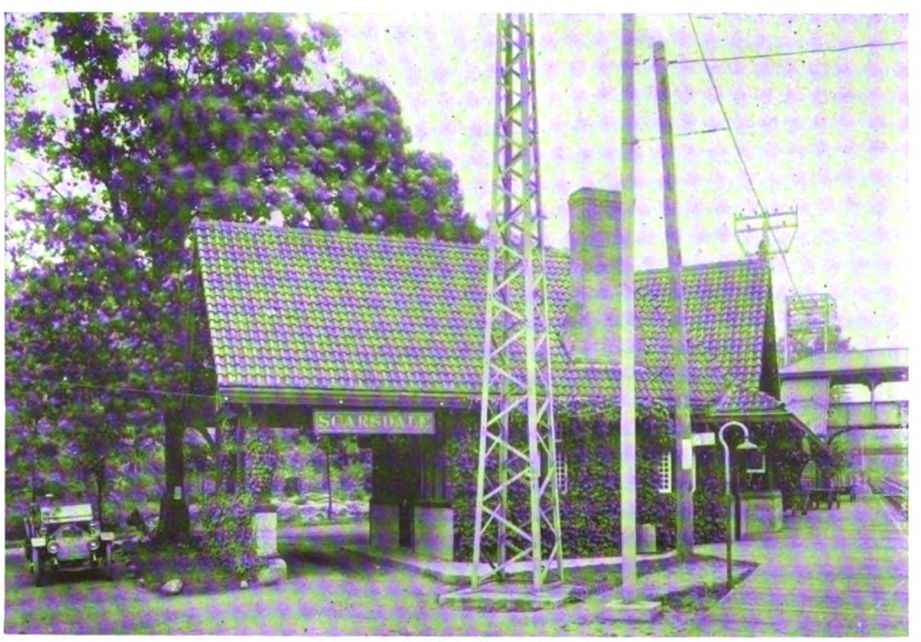
The foreign born, the native born, the children, and the children's children of foreign or native born are each, through the powerful influences of our civilization, welded into one noble creation—an American citizen. And these Americans gathered to-day, some of them on soil that less than one hundred years ago was but a part of a boundless wilderness, are, without regard to party, congratulating themselves on the fact that there is in Washington at this time, when the civilized nations of Europe are at each others throats, a man who understands America and Americans; a man who has caught the spirit of our liberty—a liberty based on civilization—and a civilization based on liberty.

And so I say that our people everywhere are holding up the hands of our President. "Peace at any price" is, on the part of a nation, as cowardly a position as peace at any price would be on the part of an individual citizen, but on the other hand aggressive warfare in which the men of a nation are killed or maimed, in which the women of a nation are deprived of the protection and the support which christian nations have always accorded them, and in which innocent children are not only robbed of their inheritance, the love and protection of parents, but are brutalized through personal contact with a suffering inflicted upon the people and the country in which the people live that baffles our understanding, such warfare cannot be right, and such warfare will disappear from the earth when the spirit of our American civilization has spread itself, as it will, over the whole world.

It is a privilege, that those of us who are here to-day should be mindful of, to be not only Americans in America, but to be residents of one of the original thirteen States.

The very ground upon which we stand was walked over by Revolutionary soldiers; one of the great battles in the Revolutionary War was the battle of White Plains, and it is said that previous to the battle the British were within the limits of Scarsdale, leaving their camp here for the battle; and just over the ridge at Tarrytown there stands a monument marking the spot where the three honest yeomen, Paulding, Williams and Van Wart, captured the British spy, André, upon whose person was found the evidence that revealed the plot in which Benedict Arnold—a sick, a disappointed, yet at one time a valiant American soldier, was to deliver into the hands of the enemy West Point, with its stores and magazines, including nearly the whole stock of powder of the American Army. Just over the line in Connecticut stands a monument to General Putnam, who left his team standing at the plow while he hurried to Lexington, sixty-eight miles away to fight for his country.

Residence of Mr. F. H. Bethell, Scarsdale



Scarsdale Station, N. Y. Central

And so Scarsdale, the fairest of villages, now the proud possessor of an American flag, is noble because of its citizenship; is beautiful because of its natural charm, and interesting because of its associations.

Caleb Heathcote, a son of the Mayor of Chester in England, was born in England in 1665. When a young man he came to the Colonies. Caleb Heathcote was a good man; he was a zealous churchman, and was one of the petitioners for a license to build Trinity Church. He held many offices; he was Commander in Chief of the forces of the Colony; surveyor-general of the province; and Receiver General of the Customs of all North America. From 1711–1714 he was Mayor of New York and later he was Judge of Westchester County. His large estates were erected into the Manor and Lordship of Scarsdale in 1701.

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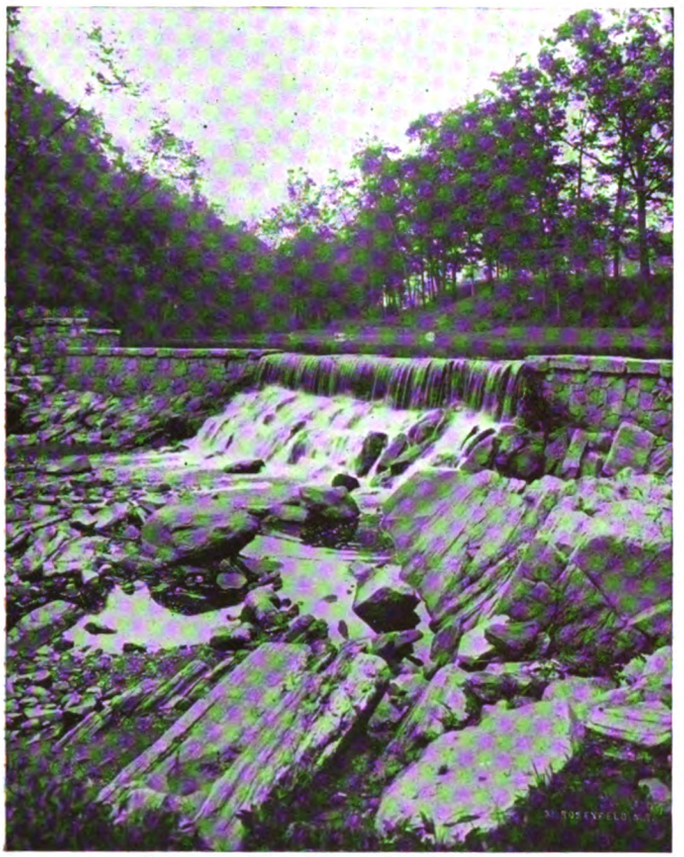

Falls in the Bronx River at Scarsdale Station

Now, for a moment, we will consider the history of Scarsdale. It appears that "Quaroppas," an Indian word meaning "the white plains," was ceded to John Richbell by the Indian proprietors in 1660. It was in 1696 that Colonel Heathcote obtained by purchase from Anne Richbell, widow of John Richbell, the patent right to purchase lands, which were included in her husband's purchase of 1660. In 1701, the year of the erection of the manor and lordship of Scarsdale, the purchase of the property was concluded, the agreement being witnessed by four Indians—Parthenk, Beaupo, Kohawney, and Wapetuck, representing the Mohegan tribe, and a corresponding number of white witnesses. The property acquired was named Scarsdale for the reason that members of the Heathcote family in this country came originally from Scarsdale, Derbyshire, England.

In a description of that part of Derbyshire in which Scarsdale is located, we find, "Scarsdale, a dale inclosed with rocks, for crags were called scarrs by the Saxons." The present town of Scarsdale was organized in 1788, and it appears from the records that there were here at that time 33 heads of families, 126 free males, 53 of them being under 16 years of age, 113 free white females, including heads of families, 14 other free persons, and 28 slaves; a total of 281.

And so we have it that Scarsdale on this side of the water, named for the older Scarsdale in England, came into existence seventy-five years before the Colonies declared their independence. A respectable age was ours when the Liberty Bell at Philadelphia rang out, proclaiming liberty throughout the land.

It was in 1788, twelve years after the Declaration of Independence was signed, that the town of Scarsdale was organized, and now some two hundred and fourteen years after the erection of Scarsdale as a manor and one hundred and twenty-seven years after it became a town, we find ourselves incorporated as a village to continue that liberty which we think should be ours.

History does not record a dishonest act on the part of any agent, officer, or representative of Scarsdale, during all the years of its existence, but history does record, and we all rejoice in it, the fact that our affairs have always been honestly and efficiently administered.

And now, on behalf of the Trustees of the Village, and on my own behalf, I pledge you that this, the first village administration, will devote itself to the interests of Scarsdale to the end that the people shall have that to which they are entitled, an efficient and economical administration of village affairs. Did I not deeply appreciate the honor that has been conferred upon me, and did I not accept with the honor the responsibility that goes with it, I would be lacking in traits that go to make an American citizen.

Seal of the New Village of Scarsdale. Designed by Maitland de Gogorza, Artist, Advertising Department, New York Telephone Company

A Sales Talk

ALMOST every day's newspapers contain "tips" which alert salesmen of the Company can use in showing present and prospective subscribers how the telephone can be made to increase their business.

The neglect of the telephone, when so much depends upon its efficient use, is one of the unsolved mysteries of this so-called practical age. If our representatives could only make the public see that the greatest value is not in the convenience of having a telephone so much as in the benefits of using it, they would astonish themselves at the result, and the public would rise up and call them blessed.

Remember what Benjamin Franklin said: "A little neglect may breed mischief: for want of a nail the shoe was lost; for want of a shoe the horse was lost; for want of a horse the rider was lost."

The telephone will take the place of nail, shoe, horse, and rider.

Two illustrations, Mr. Commercial Man, for your customers, showing how the telephone was used and not neglected:—

From "Dollars and Sense," by H. J. Barrett, in the *Evening World*, New York, July 3:

How the Telephone Brings Business to a Clothier

"Hello, Main 706?"
"Yes."
"Is this Mr. Blank?"
"Yes."
"This is Jones, salesman at Shepard's, the clothier's. My records show that you were in here two weeks ago looking for a gray cheviot—coat 38, trousers 34, 32. You wanted to pay about $20. We had nothing in stock at the time that appealed to you, but yesterday we received a heavy shipment from New York, regular $27.50 suits, which we're putting on sale to-morrow at $18. I'm holding out a couple of models which it seems to me will strike your fancy. Can't you drop in this afternoon and look 'em over?"

"Certainly. Much obliged for your thoughtfulness in remembering me. That's what I call real service. I'll be in at about three o'clock."

And at three o'clock Jones marked up another sale to the credit of the telephone and his own enterprise.

"Jone puts in about an hour a day on the phone," said his employer in answer to my inquiry. "He originated the plan some months ago. It has more than tripled his average day's sales, with a consequent favorable effect on his pay envelope. Furthermore, the rest of my staff has adopted the same plan. Not only do we follow up cases like that of Mr. Blank, but in the case of special values call up all our regular customers. Backed by a liberal use of newspaper space, it brings splendid results. Our customers feel flattered at the attention. And the profit on a single sale pays for hundreds of telephone calls."

From *Chalmers Monogram*, published by the Chalmers Motor Company for its sales force, for July:

Gamble Shows Spirit

"You can't keep a good man down." Harry G. Gamble, Akron, O., has recently been operated on for appendicitis and is laid up in the hospital. But he is calling his prospects on the telephone and closing them to increase his standing in the Sales Contest.

Gamble has the never-say-quit spirit of "Fighting Three." He writes to Captain Booth, "I'm going to get one or two orders before I leave here and the hospital will have to buy one if they expect to retain my business! Keep after them, Booth—all the time—don't let 'em sit down."

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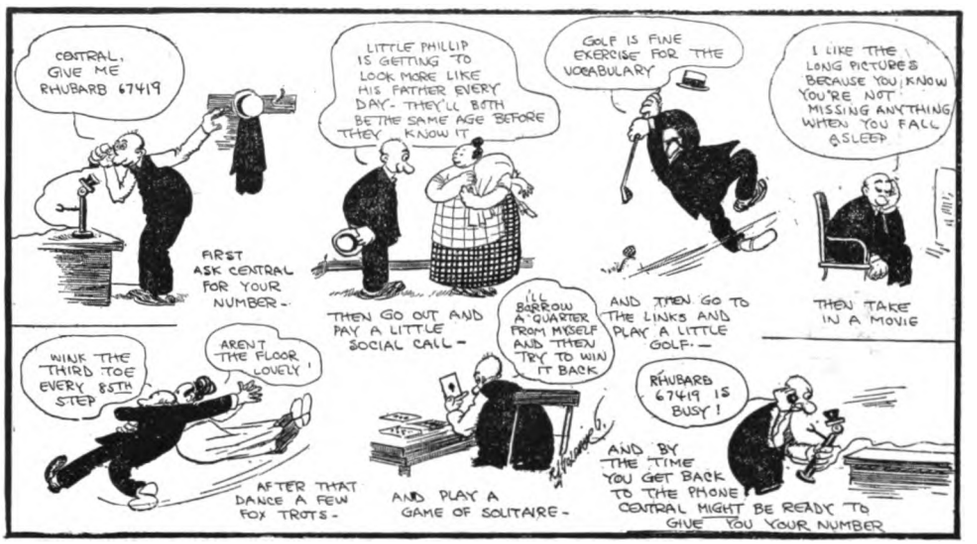
We're Laughing With You, Mr. Goldberg



Why Lose All That Valuable Time It Takes to Get a Telephone Number?
• Copyright by R. L. Goldberg

"NOTHING so promptly appeals to the American public as the upholding of an ideal, nothing so promptly awakens their sympathy as to show the traitor to an ideal in his appropriate colors. It is for this reason that our cartoonists have so strong a hold on the popular imagination. It was Nast who won the battle against Tweed."

The foregoing are words of a writer in a recent issue of the New York *Times Sunday Magazine*, and they are brought to mind by two cartoons which we reproduce on this page, drawn by Goldberg and Davenport, two of the leading American cartoonists of the present day. Both take the telephone as their subject, and both cartoons depict conditions which are far from ideal, and against which the telephone company and its intelligent patrons—including private branch exchange operators—have been contending with all their energy. The first, by Goldberg, shows a subscriber who, after placing his call, has time to do almost everything but take a trip to the California Expositions and play a game of cricket, before the called subscriber answers.

The explanation is to be found, however, in the second cartoon, drawn by Davenport. The much maligned "central" is not responsible. The central office operator's average answering time is only 3.6 seconds, and she does her part to complete the connection, statistics showing that she is able to get the called party to his end of the line and start the conversation in the average time of only 24 seconds. It is the pride and glory of our operators that they have been able to establish such a record, which is unequalled anywhere in the world, and it is an ideal which they maintain and are all trying to improve upon.

The public, whether subscribers or only casual telephone users, want quick service, and by the promptness with which they place their numbers and answer their calls they are helping both to give and to get it. The excellent results that have been obtained demonstrate how efficiently they are coöperating with the Company, and for this they deserve much of the credit for the high standard that has been attained.

Not only does the telephone company recognize this, but the reputation of Americans in general as efficient telephone users, as well as habitual telephone users, has gone abroad. In a recent article by an official of the British Government telephone administration, which appeared in the *Telegraph and Telephone Journal*, published "Under the patronage of the [British] Postmaster-General, "the frank statement is made that

> There is ground for the belief that one of the main reasons why the London [telephone] service is less efficient than that of New York is to be found in the inferior telephone efficiency of its subscribers.

Both our telephone operators and our efficient telephone patrons are the victims of carelessness and indifference on the part of users represented in Davenport's cartoon, who are largely responsible for the situation pictured by Goldberg. A man might put in a call, and do all the things shown by Goldberg, beside swearing a little in between (as he would most likely do), and the operator backed by the whole power of the telephone company might do everything humanly possible, without obtaining the slightest result if the called subscriber failed to answer.

Telephone service is also slowed up tremendously by patrons who fail to consult the directory, but pick wrong numbers out of their memory, and by other thoughtless acts which exasperate other subscribers and reflect upon the telephone service unjustly.

Goldberg has performed a valuable service unintentionally by giving another opportunity to offset a popular misconception with a correct representation of some of the facts by his fellow artist, Davenport.

We thank you both, Gentlemen!

Think It Over
Copyright by W. R. Davenport

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Address of Mr. Vail at the Commencement Exercises of Lyndon Institute and Lyndon School of Agriculture

LYNDON CENTER, VERMONT, JUNE 18, 1915.

To be a hero on the battlefield calls for qualities entirely different from those necessary to carve an honorable and successful career in our daily vocations. A survivor of the famous Light Brigade after the charge at Balaklava replied when lauded for his bravery, "Any man can be brave for twenty minutes," and a little boy who aspired to be holy wrote in his diary one day, "It is very difficult to be a saint while living in one's own family."

We who have entered upon the "struggle of life, in which results depend entirely upon individual effort and accomplishment," may learn much from Mr. Vail's advice to those who were just entering upon it.—THE EDITOR.

GRADUATES:

TO anyone entering upon that struggle of life, in which results depend entirely upon individual effort and accomplishment, from whatever standpoint the entry is made, all necessary or pertinent advice is contained in a few maxims or aphorisms—the precious crystals of the thought and the experience of untold ages.

There can be little or nothing said that is new, for however presented, or in whatever wording, these few crystals give value to the whole.

What I am saying to-day is but a resetting, a rearrangement, of what I have said, what others have said, and what all will say on similar occasions to the end of time.

One of these crystallized thoughts that shines out of the darkness and haze of prehistoric times is: Look well to your foundations.

It matters not whether of character, fortune, prestige, position in life, whatever it may be, the foundations must be properly and thoroughly established, that they may and shall support and carry whatever superstructures may be placed upon them.

Thoroughness is the principal quality in the preparation for, and the upbuilding of, the superstructure; the cornerstone should be integrity and the binding material should be unimpeachable character. These are essentials in the upbuilding and support of any lasting, desirable, and successful career or structure.

A desirable or successful career can only be one which commands the respect and the approbation of the community, and, above all, the honest internal approbation and respect of each individual. It cannot be measured with the yardstick of material gain or accumulation, but only by the measure of real internal self-satisfaction and the happiness derived from a wholesome life and from wholesome living; by doing that which is to be done in the best possible manner; by making the best of everything, and turning whatever may come to the best possible advantage.

With honesty of purpose, thorough preparedness, intelligent, persistent application, continuity of purpose, in the upbuilding of a career, no push or pull is needed except that push and pull which comes from the dynamic force within, and from the inductive force created by it, without.

The idea that in this world there is anything due to anyone without effort is misleading, false, and dangerous. There is a living due to everyone in this world, but the collecting must be done by the individual.

Ambition and ambitious effort will not achieve anything beyond that which is due entirely to the quality and character of the effort put forth, nor will ambition, even when backed by effort, achieve all that is strived for. It never has; it never will. The paths of life are strewn with the wrecks caused by selfish, unheeding ambition, for ambition and ambitious desire may degenerate into or become covetousness or selfish desire, and the intoxication of desire, the brilliancy of imagination, or the shadow of envy and covetousness, may make it impossible to see the obstacles which are sure to be met or to clearly appreciate the particular limitations with which nature has, to a greater or less extent, *endowed* every individual. The dangerous obstacles are not the ones which can be foreseen or forecast and prepared for. It is the unknown and unexpected ones that call upon the resources and reserves of strength, will, tenacity, and preparation which all who succeed must possess.

Material success alone never brought that reward of unqualified comfort or satisfaction or contentment. Substantial, real happiness in life is made up almost entirely of simple things within the reach of everyone; it depends upon the qualities of mind and habits; it comes from the character of the habit of thought, self-created and self-cultivated; from the habit of choosing the best interpretation of act or word; from the habit of making the most of every talent, endowment or opportunity; from making the best of those set-backs and retardations in life which could easily be construed or regarded as misfortunes or disasters. While a fool's paradise may not be desirable or advised, yet even that is better than a purgatory created by distorted imagination and delusion, more than it is by misfortune.

Cunning, sharpness, trickery, misleading words or acts in business, are but the substitutes for brute force, the successor of the physical prowess of the medieval baron or the highwayman of all times. When the protection of society made force punishable and the power of the community could enforce the penalty, cunning and stratagem were substituted, and because cunning and stratagem and tricks can and may be of such an undefinable character as keeps them within the letter of the law, it does not justify the use nor does it entirely avoid a penalty; it is bound to be followed by the loss of self-respect and the respect of the community as well as the material losses which are the inevitable ultimate result of such courses of action.

If there is a question of material gain or of self-respect and neighborly approbation, the latter should always be chosen. The best citizen is one who does his full duty toward himself, his family, and the community. A really self-respecting citizen, one who does not delude himself, is always a good one.

We hear much about progressiveness, uplift, and higher ideals. Progressiveness is good when subordinated to conservative common sense and practical initiative, but it must not be overlooked that old methods and old ideas were always founded on existing conditions or on existing necessities, and were the outgrowth of existing possibilities.

Before discarding old ideas or old methods, first ascertain, and ascertain conclusively, whether old conditions and old necessities had changed or ought to be

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changed, whether new possibilities existed, whether or not the supposed imperfections of the old were caused by improper, unintelligent or ignorant use or operation which could be corrected by intelligent understanding and effort, or whether or not adjustments or modifications instead of radical change and destruction would not accomplish all that could be accomplished or desired. *And above all do not undertake to change undesirable methods that are controlled by undesirable conditions, before changing the conditions. Methods will always be governed by conditions.*

Promises and prophecy as to the advantages and performance of new methods, new ideas, new conditions, new and aspiring individuals, are too often based on imagination rather than experience; their object is too often immediate personal benefit rather than ultimate accomplishment; little or no responsibility is recognized, for much will be forgotten when the time for accountability comes; therefore there is little or no limitation to what may be promised or prophesied, and it can be made so flexible as to overcome any suggested objections.

The faults, disadvantages, and imperfections of things "existing" are known, experience has revealed them; those of things "new" can only be learned in the same way.

While care must be taken in the adoption and acceptation of new ideas and new methods, there is no excuse for retrogression, stupid "standpatness," or ignorant or obstinate opposition to all that is new. While revolution may be successful, it is always destructive. Evolution will not be so radical, it will be gradual and will not be disorganizing or destructive. Intelligent conservatism, combined with intelligent progression, is what preserves the good and useful and brings all the potentialities of the "new" into active possibilities and final realization.

All that is needed is to keep the "machine" in good repair and condition and under full control when passing blind crossings, corners or turnings, full speed ahead when the way is certain and clear. By so doing the end will be reached about as quickly and with much more certainty unless set back or delayed by the recklessness of others. Do not any of you be the reckless one.

Your first and greatest lesson of life has been learned when your individual action is based upon a thorough understanding and recognition of these truths.

THEO. N. VAIL.

Suburban Long Island Congratulates Her Chief Operator

ON the morning of June 30, 1915, the office of the District Traffic Manager of Suburban Long Island was the scene of more than usual activity. And it was not the daily routine of business either; the telephones were not being used to any great extent, the typewriter was not making the faintest click and yet all was hurry and flurry. To explain all this we must go back, several years in fact, to the year 1890, for on June 30 of that year Miss Irene Tompkins entered the service of the New York Telephone Company at the South central office. By faithful and efficient service Miss Tompkins rose from operator to Chief Operator, and in 1903 Suburban Long Island claimed her as "Suburban Chief Operator," the title and position which she now possesses and fills so capably.

And now for the explanation of the "hurry and flurry." What was more fitting than a recognition of Miss Tompkins's twenty-fifth anniversary? Therefore, with much secrecy (and the exact whereabouts of Miss Tompkins being known whenever a telephone conversation was contemplated) it was decided to make June 30, 1915, mean something more to "Suburbanites" than any ordinary June 30.

With yellow and white crêpe paper streamers, cut flowers and ferns (the ferns being loaned by Mr. O. B. Coomes, a local florist) our office was transformed from a workshop to a—well, we'll call it a bower of roses. When everything had been arranged to our complete satisfaction, Miss Tompkins was asked to come in from Floral Park where she had expected to spend a busy day. Upon reaching the office Miss Tompkins was met by a "reception committee" comprised of Mr. Orth, the Misses Bennett and Miss Scott, and received their congratulations. Her surprise at such proceedings was nothing compared to the surprise when she saw how the office had been transformed, but when Mr. Orth presented Miss Tompkins with a beautiful brooch, the gift of the Chief Operators in her district, the surprise was complete.

Miss Irene Tompkins, Suburban Chief Operator, Long Island, on the 25th Anniversary of Her Employment by the Company

Miss Tompkins received many messages of congratulation during the day and had a large number of callers. Flowers were received from some of the Suburban operators and several central offices sent telegrams of congratulation.

It was a day long to be remembered, both by Miss Tompkins and by all who participated in making her twenty-fifth anniversary a very pleasant occasion.

BESSIE A. SCOTT, *Chief Clerk, Suburban Long Island Traffic.*

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The Intervale Cut-over

By J. J. Barr, Construction Department, Manhattan-Bronx-Westchester

ON account of the demand for telephone service in the Bronx, because of its increasing population, a three-story building was erected at No. 1106 Hoe avenue in order to provide adequate quarters for the new Intervale Central Office. The first floor is occupied by the Commercial Department and operators' lunch and locker rooms, the second floor by the terminal room and operators' rest room, and the third floor by the Operating Department.

The Intervale district comprises the southeastern part of the Tremont and the northeastern part of the Melrose district. The building's relation to the district is nearly central. The vault in the basement is equipped with the Buffalo type of racking and is the first of its kind in Greater New York.

All cut-overs are particularly interesting because of new problems which continually present themselves, and there is always some feature which is peculiar to the job. In this cut-over the problems were as follows:

First: In order to secure a sufficient amount of 303-pair No. 19 gauge cable for the establishment of two 300-pair trunk cables between the Melrose and Intervale central offices, and one between the Tremont and Intervale central offices, three subscriber cables had to be cleared. This was accomplished by transferring all the block and pole subsidiary sections to the new Intervale cables and trunking the working lines back to the old offices on any spare conductors in any cables that were available. Then the cable was withdrawn from the subway and re-run in the sections where it was needed.

Second: On account of splicing to the ends of the Melrose and Tremont cables the work was difficult because of not being able to get the best looping conditions. However, under these circumstances the new cables were bridged to the existing cables, thereby providing sufficient trunking conductors.

Third: A special attempt was made to make a permanent job in every manhole where it was necessary to transfer the subsidiary section from the old to the new cable. This was done by either looping, strapping, or trunking the working lines back to the old central office.

Without going into too much detail, the following synopsis will give a fairly good idea as to the character of the work:

A large amount of new subway had to be built.

The cable work consisted of running 19,968 ft. of 909-pair No. 22 gauge cable; 977 ft. of 404-pair No. 22 gauge cable and 5,175 ft. of 303-pair No. 19 gauge cable.

Owing to the size of the job the order of splicing was laid out in 106 separate steps so that the work could be started simultaneously at several different points, and this did not include any of the straight splicing or stubbing.

The following is a summary of the amount of work involved:

Number of Transfers	576
" " Backtaps	1,500
" " Temporary straps	1,524
" " Pairs thrown	11,669
" " Pairs bridged	3,868
" " Pairs straight spliced and stubbed	80,194

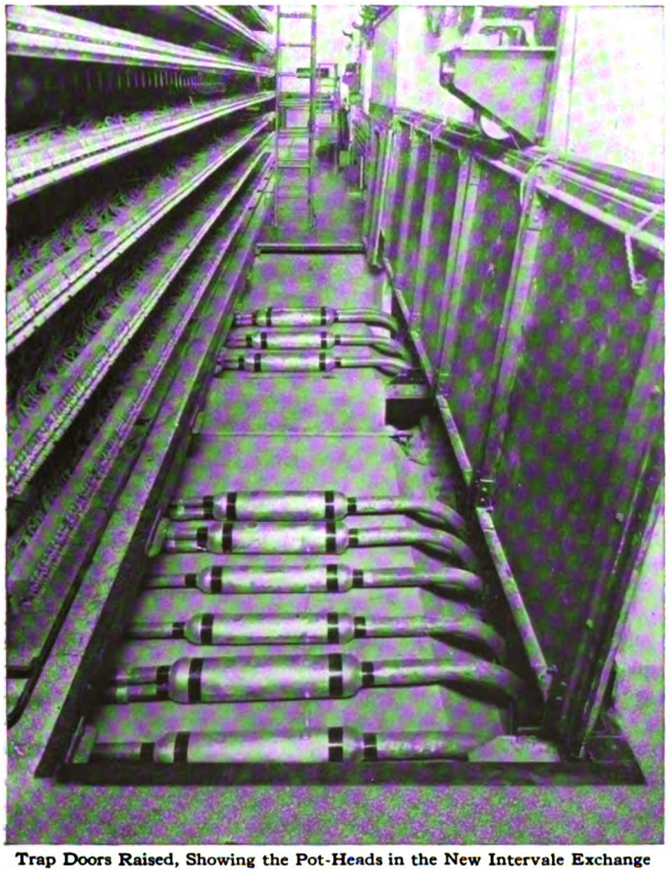
All of the above work was done with little trouble.

The wire work consisted of the following:

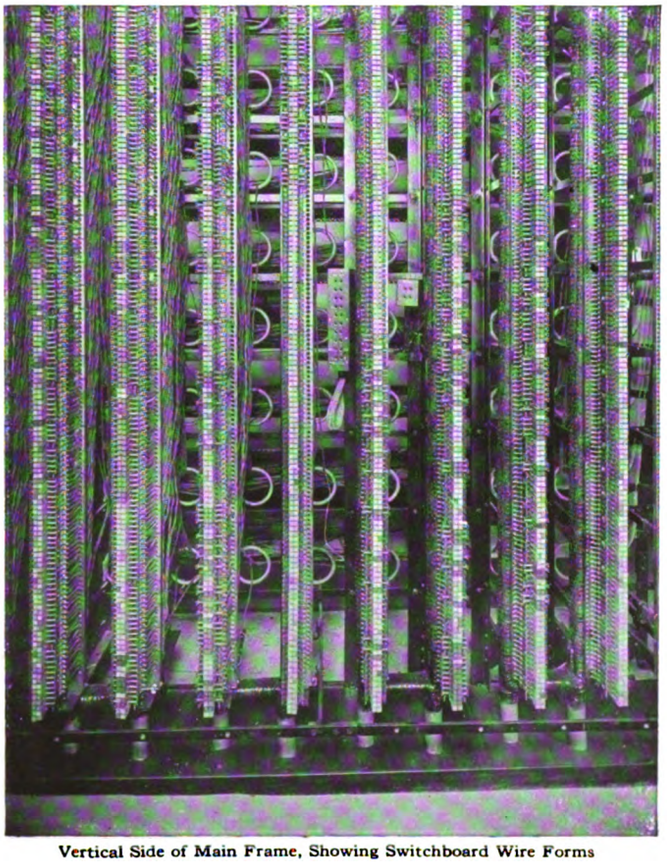
Subscriber cross-connections	3,000
Trunk cross-connections	1,000
Batteries and generators	500
Miscellaneous	100

Ten thousand feet of the one hundred, and twenty-five thousand feet of No. 22 red and black twisted distributing board wire which were pulled out from previous cut-overs were re-used on this job.

A new trunk cable had to be established from Southern Manhattan to the Bronx and on account of the construction work on the dual Rapid Transit



Trap Doors Raised, Showing the Pot-Heads in the New Intervale Exchange



Vertical Side of Main Frame, Showing Switchboard Wire Forms

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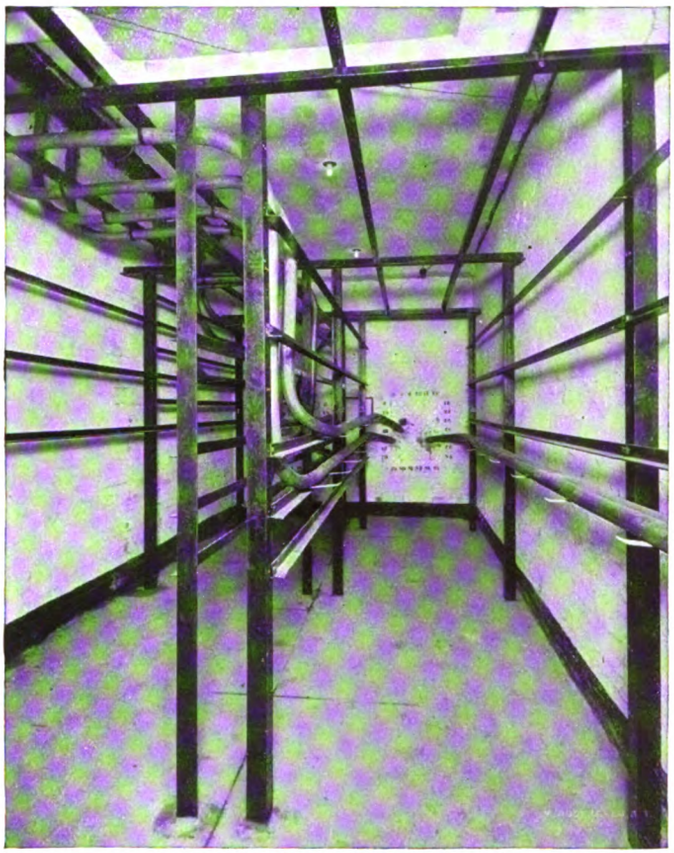
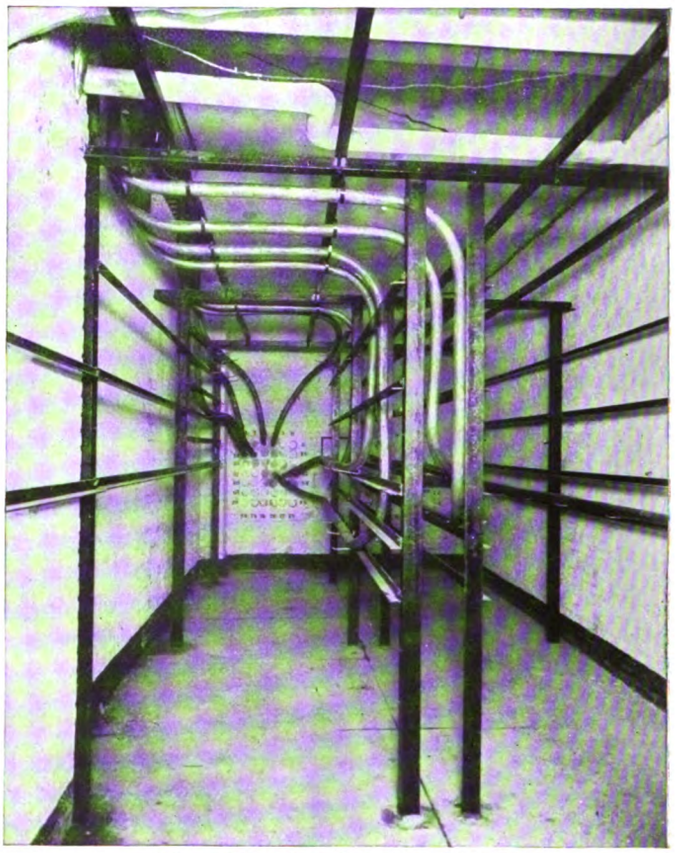


South Half of East End of Cable Vault



North Half of East End of Cable Vault

THE CABLE VAULT, NEW INTERVALE CENTRAL OFFICE

Subway along Lexington avenue, the progress of this work was greatly impeded. At certain locations it was not advisable to run the new 303-pair cable because of the open cuts and temporary work which had to be done. These delays held up the completion of the cable until ten days prior to the cut-over, after which 1,140 transfers had to be made and a thousand through cross-connections removed, the work being done in fourteen steps. Not until this work was completed could the new Intervale trunks be cut in.

On account of using a large number of trunking conductors in the permanent trunk cables between the Melrose and Intervale central offices for temporarily caring for subscriber lines during the progress of the work, all of the new trunks could not be turned over to the Equipment Department for test prior to the cut-over. Nevertheless, immediately following the cut-over the balance of the trunks was cut in for service. The excess traffic was handled over the tandem toll trunks.

As far as possible all the preliminary testing on trunks and call circuits was completed prior to the cut-over.

The new Intervale switchboard was put into service on Saturday, June 12, at 10 P.M., taking over one thousand subscriber lines from the Tremont district and two thousand from Melrose.

The switchboard is of the Western Electric type "A" common battery, and embodies all the latest circuits and apparatus; the capacity is 10,500 subscriber lines, the present equipment consisting of 5,200 subscriber lines. The "A" portion of the board consists of 8 sections and 24 positions. In the 7 trunk sections there are 14 positions.

The cut-over was accomplished by removing heat coils at Melrose and Tremont and cutting straps and removing tapes at the cut-off relays at Intervale.

[The cut-over of the new Intervale office was a very difficult one and its great success was due to the hard, conscientious work of Mr. Barr, who wrote out the splicing detail and handled all the back-tap work; Mr. W. S. Pope, Wire Chief of Melrose and Intervale, who coöperated with Mr. Barr to make the cut-over a success, and Mr. E. F. O'Neill, Splicing Foreman of the District, who handled all the splicing work. All the men engaged on the job are to be congratulated. We learn all this from Mr. S. H. Crampton, Division Superintendent of Construction.—EDITOR.]

Runaway Frightens People 600 Miles Away

THE people who happened to be around a certain livery office in Seneca Falls the other day need no assurances of the perfection of long distance telephone transmission. Mr. F. O. Spaid, Local Manager in Seneca Falls, contributes an account of a most convincing demonstration which occurred there when W. H. Metcalf, a large dealer in horses, dropped into the office and stepped to the telephone to talk with a horse buyer in Orville, O. Hardly had the conversation begun when Mr. Metcalf sprang back, ducking and dodging as though something was about to hit him from behind. Nothing seemed to threaten, so he regained his equilibrium and called several others to the telephone, where confused and frenzied cries of "Whoa," "Stop him," "Run," were rending the air and the crash of breaking glass and a turmoil of stamping and banging sounded as distinctly as if in the office where Mr. Metcalf stood.

In a minute the man in Ohio returned to the telephone and explained that a runaway horse had run afoul of the plate glass window of the office, plunging through into the room, and after entangling himself more or less with the furniture had escaped through a door into the barn. A Rochester paper remarks, "The purchase of two carloads of horses, specified to be kind and true, was completed and the talk ended."

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Intervale,

Past, Present, and Future

By J. Brackenridge, District Commercial Manager, The Bronx

INTERVALE, the youngest Bronx exchange, was cut into active service on Saturday night, June 12, 1915.

For nearly a year all new subscribers in the Melrose section of the Intervale area had been given the Intervale designation, and were served from the Melrose board, so that before the cut-over Intervale had more than 550 lines and 1,100 stations, representing less than a year's growth in the Melrose section only.

To these were added on June 12, by transfer from Melrose, 1,500 lines and 7,030 stations, and from Tremont, 810 lines and 2,250 stations, making a total of 2,860 lines and 10,380 stations in the new exchange on the date of the cut-over.

The new exchange is housed in the Company's own building at No. 1106 Hoe avenue, corner of West Farms road, and within two blocks of the Simpson street station of the subway.

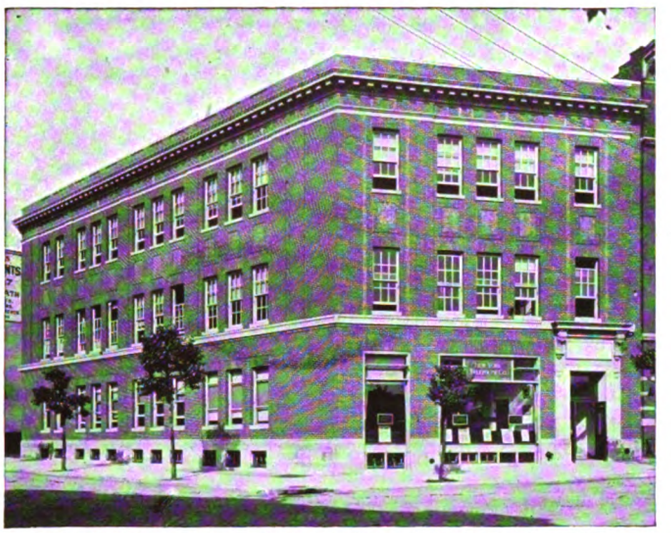
The building is ideally situated in the heart of what promises to be the most densely populated part of the Bronx, and it is acknowledged to be the very latest architectural gem of the Engineering Department of the Company.

On the first floor is the Intervale Commercial office, established January 1, 1915, in anticipation of the central office opening.

This is the third Commercial office to be established in the Bronx, and it will care for the Westchester and City Island exchange districts as well as that of Intervale.

The building stands on historic ground, near the site of the old "Hunt Inn," better known as the "Fox Farm House," which was built in 1666 and destroyed by fire on Easter Sunday, 1892.

This old inn was the rendezvous for British officers during the American Revolution, and during their occupancy of the inn many fox hunts started from the corner where our building is erected.



New York Telephone Company's New Building, 1106 Hoe Avenue, The Bronx

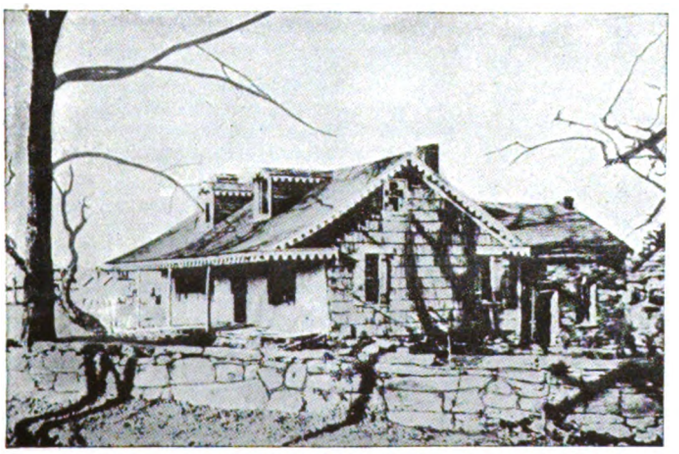
Hoe avenue is named for Colonel Hoe, the inventor of the Hoe rotary press, whose house stood on the corner of Westchester and Hoe avenues. It was torn down in 1908 to make way for the advancing army of apartment house dwellers.

Almost all the old landmarks of the district have disappeared, but a few old mansions remain, and one of the most remarkable is "The Grange," or "Hunt Mansion," still standing on the southern end of Hunt's Point. This was the home of the Richardsons and Hunts in the sixteenth century and in 1813 was the home of the poet, Joseph Rodman Drake, author of "The Culprit Fay," "American Flag," and "The Bronx."

Drake was buried in the quaint little burying ground of the Hunt family, where lie the bodies of veterans of the various Colonial wars and of Continental soldiers, members of the Hunt, Leggett, Willett, and allied families. Directly opposite the little cemetery, which is now owned and cared for by the city, is a small inclosure in which the slaves of early residents were interred.

This historic ground is destined to be the great manufacturing center of the Bronx. Hunt's Point forms more than half of the Intervale area, and so far has not been developed, but plans are under way to change its character entirely. Over six millions of dollars are being spent in improving the water front, building docks and barge terminals, and in filling up swamp land, so that industrial and manufacturing concerns may be attracted by ample water and rail facilities.

The Bronx River, forming the eastern boundary of the Intervale central office district, is navigable throughout this entire distance, and is being deepened and widened by the Government to permit of greater usefulness in freight transportation.



The Old Hunt Inn

Hunt's Mansion

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It is not necessary to be a prophet or the son of a prophet to foretell the giant strides of the telephone business along the shores of the lower Bronx River and in Hunt's Point.

The development of the past five years in the Bronx has been largely the development of this Intervale section. Hundreds of apartment houses have been built, and most of them are equipped with private branch exchange systems. Builders with visions of the future have had faith enough in the Bronx to plant a city where only farms existed, and the story of how the transformation has taken place in a few years would sound like a fairy tale.

Slave Burying Ground, Hunt's Point

Naturally, the subway with its five stations in the Intervale district has helped to make the transformation possible, and now that another subway with three more stations is under way, there is every reason to believe that the next five years will equal those that have passed.

The Bronx Superintendent of Buildings in his semi-annual report for 1915 shows that in six months plans have been filed for 535 buildings at an estimated cost of $15,895,500, exceeding 1914 by $5,000,000, and 1913, which was the biggest year for building previous to this by $500,000.

The surface has only been scratched, so far as the telephone business is concerned. There is an almost unlimited field, present and prospective, and it is safe to predict that, while Intervale is now the youngest of the Bronx central offices, it will become one of the largest and most important in the near future.

The Power Plant Force

By F. C. Fowler, Power Plant Inspector, Long Island

A MODERN telephone power plant, when first viewed by an outsider, is somewhat of a revelation for one can hardly conceive of what all the machines, etc., are used for when his single telephone "only rings and talks." To make the telephone bell "ring" it is necessary to have energy, and this is supplied in the electric form by means of special machines. To make the telephone "talk" it is also necessary to have energy; this is supplied in the electric form by special machines, batteries, or both. And so it is that the different circuits of the telephone office are supplied with the energy they require, until the up-to-date office in the busy centers has an equipment of from 10 to 15 machines; 2 to 5 or 6 batteries; and 2 or more power panels with a varied assortment of apparatus mounted upon them, both front and rear, for controlling the machines and batteries.

Some idea of the energy required to operate the machines in such an office may be gained from the fact that the total energy is often greater than one hundred horse power. These machines, however, are not all operated at the same time, the equipment being such that in the event of one machine's being "out of service" there are similar machines for doing the same work. It is the duty of the Division Power Plant Force to care for the proper maintenance and repair of these units. As an illustration, this force may be likened to the ambulance corps of an army, and since it is the duty of the ambulance corps to care for the sick and wounded and guard against sickness, so it is the duty of the Power Plant Force to care for "sick and wounded" motors, generators, engines, batteries, switches, circuit breakers, meters, etc., and to guard against their getting "sick." That such inanimate things can and do get sick will be attested by any Power Plant man, and they can get sick at all hours of the day and night—Sundays, holidays, and Saturday afternoons, but the Power Plant men of my experience have ever been ready and willing for service of any kind and at any time and their zeal is second to none.

The power service for a telephone plant is as unfailing as human skill and ingenuity can make it, and the record of its failures is small indeed, even where uncontrolled nature is concerned, such as fire, flood, earthquakes, etc. The problem of uninterrupted service is not what it was a few years ago, but the Power Plant man has his problems occasionally and takes keen pride in solving them, and so realizing that his efforts have helped to make the telephone service what it is to-day.

Mr. Bruno Says—

GREENWICH, CONN., is the center of a population of about 75,000, including seven nearby towns, and the *News and Graphic* claims the honor of having the largest circulation of any newspaper printed in this territory. It is a semi-weekly of real value to its readers and advertisers.

It is quite a proposition to keep in touch with all the news and business that is going on in your own town and seven towns around you at the same time, but the *News and Graphic* knows how to do it—by using the telephone.

Recently Mr. Henry A. Bruno, Jr., the advertising manager, was speaking of this to Mr. Wallace Duryea, our Agent-in-Charge in Greenwich, who asked for a letter about it which could be sent down and printed so that other commercial men could give the newspapers in their territory the benefit of Mr. Bruno's experience in soliciting advertising. We take great pleasure in printing what Mr. Bruno wrote:

It gives me much pleasure to say that I have found the use of the telephone invaluable in my business, which as you know is the securing of advertising for our paper.

Greenwich, placed as it is between Port Chester and Stamford, has unique possibilities. There are times when I have found it practically impossible to go either to Port Chester or Stamford, and I therefore had to do a lot of soliciting by telephone. It may surprise you to know that nearly 25 per cent. of the business secured has been over the telephone. There is an old-time prejudice on the part of a good many men, especially those who are salesmen, against the use of the telephone. They think they must see their customer face to face in order to close the deal.

As you probably know, the selling of advertising space is much harder than selling articles for the reason that when the salesmen is selling the staple article, in nine times out of ten he carries a sample with him, or at any rate literature which he can show to his prospective purchaser.

In the case of a man such as I, selling advertising space, there is practically nothing to show his prospect, which naturally makes it very difficult to secure his business.

I do not hesitate to say that I consider the telephone invaluable and a very efficient aid to the increasing of my business.

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The Foundation of Good Service

By Nellie L. Westover, School Manager, Central Division

"IT is quite evident that the secret of success of the Telephone Company is in the coöperation of its employees." This statement was made recently by a subscriber, a business man, after a visit to one of our central offices.

This great organization of ours is made up of many units, each dependent upon the other. Complete coöperation between these units is necessary for the success of our organization as a whole. From the day a young woman enters our school as a student, this spirit is constantly before her. Here is where she receives her first impressions of the work, and where the foundation is laid for her future as an employee. She is eager to absorb the knowledge imparted, for she realizes that her irresponsible school days are ended and that she is embarking upon her career as a business woman.

It is by keeping in close touch with the central office people, who take up the work of completing the training of the student after she leaves the school, that the student is developed in the right direction. In the school, she begins to realize that the important part of any rule is its spirit. In the central office, she gradually learns that every rule is the fruit of wisdom gained by experience, and that it should be obeyed not merely because it is a rule, but because it is necessary and just. She learns, in fact, that years of experience and study have produced rules so wise and workable that it is actually easier to give good service—good from the subscriber's point of view as well as from the Company's—correctly than otherwise. And so she becomes a "regular" in the great army whose aim is to give service; and "service" is simply doing our best—not to-day—not to-morrow—but *every day.*

One of the strongest proofs of this spirit of service and mutual helpfulness is the manner in which emergencies are met. Telephone traffic responds to unusual activities in human affairs, as the mercury in a thermometer responds to differences of temperature, and our officials have always before them the problem of adjusting the force to such sudden rushes of traffic. The most potent factor helping in the solution of this problem is the willingness and enthusiasm with which the force meets such emergencies, and it is just such emergencies that prove the value of the individual employee as well as of our wonderful organization.

The operators realize that this spirit of helpfulness is appreciated by the Company as evidenced by the various plans it has voluntarily instituted for their welfare. The Benefit Plan which continues salary payments in case of sickness and accident, provides pensions when years of usefulness are past, and even death benefits—all at absolutely no expense to the employee—is one of the most striking examples of the Company's interest in its loyal workers. In especial recognition of the value of a faithful and dependable operating force, the Company has also instituted a system of anniversary payments. And last, but not least, we have been allowed the privilege of becoming stockholders in this great Company which stands for the mutual welfare of employer and employee.

An Accounting Cut-over

WHAT is confidently believed to be the largest "cut-over" in the history of telephone accounting was made in New York City during May and June of this year as a result of the rate changes effective July 1. The accounts of approximately 200,000 subscribers had to be changed. After these accounts—involving all sorts of complications that go with measured service accounts—were adjusted on the books of the Company, it was necessary to inform the subscribers of the change and bill them at the new rates without holding up the July 1 bills beyond the usual forwarding date. As it was also necessary to keep all regular routine work up to date, practically all of the extra work caused by the rate change had to be performed by working overtime. Before the actual work of adjusting the accounts was begun, conferences were held and detailed written instructions and schedules of dates on which each of the various parts of the work was to be completed had to be prepared.

On the evening of May 19 the work was started, and a force of approximately 200 employees began the work of drawing off from the subscribers' ledgers on to special forms the details of service and equipment charges at the old rates and showing on these forms the charges according to the new schedule for each subscriber's service contract. These forms if bound would make a library of 1,000 large quarto volumes containing 740 pages each, some two or three tons of books.

There were at least four things to do in connection with each subscriber's account. It was necessary to enter the contract data and the old rates on the notice form, to enter the new rates on the ledger record of the subscriber's account, to enter the new rates on the notice form, and to check the new rates on each notice form against the new rates on the ledger record. The work was so arranged and divided that a complete check of each clerk's work was made by other clerks and by means of various cross-checks and double-checks, mistakes, if any, were discovered at once.

The task performed was approximately equal to going through about 600,000 sheets and making anywhere from one to fifty careful arithmetical entries on each sheet and afterward verifying separately the correctness of all these entries. These sheets if bound together would make a book approximately 200 feet thick. The work required approximately 12,000 hours of overtime, which is equal to about six years of steady work for one man.

There is every reason to believe that the subscribers' bills forwarded on July 1 were fully up to the usual standard of accuracy. The work, which was done on time and in a satisfactory manner, was accomplished, despite the usual rush of May contract work, only by careful and comprehensive planning. Daily reports were received from the different accounting centers affected, and employees were transferred from one office to another when necessary. It was the Bell spirit that made the satisfactory completion of the work possible, and the Revenue Accounting forces by their efficient work and loyalty under the tremendous pressure that was placed upon them have given evidence that they possess this spirit in the fullest measure.

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Information's Real Job

THE purpose of all the branches of the telephone business is to furnish the means whereby one person may be put in conversational touch with another at request. The Information Bureau is one of the most essential means of accomplishing this and its use is an indispensable asset in the service that we render. Its abuse, however, impedes the service, and hence the elimination of this surprisingly common practice is extremely important. Every time a call comes to Information on a matter not related to the business of completing a telephone connection, there is a chance that it may interfere with or delay an important transaction along the legitimate lines of Information business, and in any case the mass of questions regarding matters entirely foreign to telephone business forms a sort of incubus riding the efficiency of the Information Bureau at the behest of an unthinking public.

Evidently a large proportion of the telephone-using public labors under the delusion that "Information" is a delightful convenience placed at the service of the public by an altruistic telephone company, but having no essential connection with the telephone business. In one Information office in New York City a record was kept of some of the more unusual questions asked of the operators, and the list is amazing, though probably not more so than a similar record from any other Information Bureau in the city.

"Who is considered the 'Onion King' in the Stock Exchange?" Perhaps it was a budding financier, or a contemplative gardener, but in either case his idea of the telephone business seems to have been in need of a few friendly and enlightening suggestions.

Possibly it was a Mrs. Newlywed who inquired, "Has —— Department Store a grocery department?" If so, she might profit by a lesson in the use of the Telephone Directory and the sound advice that if you want to know what a certain store carries, no one can tell you better than the store.

One bashful swain turns for counsel and advice to Information and stammeringly asks, "Is it appropriate to wear a blue serge suit and tan shoes to a 'Graduation,' or is a full dress suit necessary?"

"A check was returned to me stamped 'No funds.' What does this mean?" This seeker of knowledge evidently knows as little about the Telephone Company as about the proper use of the Information Bureau; what should any employee of the Company know of worthless checks?

Another kind of paper, perhaps not less valuable, interests the scribe who bashfully inquires, "How many sheets in a ream?"

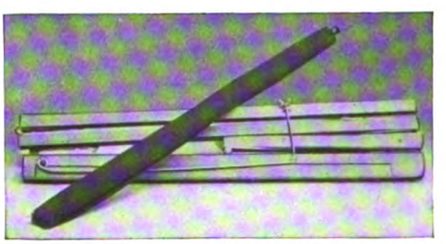
"What boats take freight to Baltimore?" "Are the banks open on holidays like Lincoln's Birthday?" "What is the difference between New York and Chicago time?" "What part of New York is called the Tenderloin?" "Is it raining in Paterson now?" "Do you know anything about the Labor Law?"

These are actual questions, taken verbatim from the record of one office. If the Telephone Information Bureau were a place to obtain all the information which could be procured by telephoning anywhere, there could hardly be a greater variety in the questions which pour in. Whether it is really a case of misunderstanding of what the purpose of the Information Bureau is, or utter carelessness and disregard, or mere mischief—and it is probably all three and more—the remedy is the same. The public must be shown. They must be made to see and understand how futile it is to abuse Information in this way. A clear idea that Information exists to facilitate the completion of desired telephone connections, that it exists for that and that only, would soon put an effective quietus upon the practice. It is a matter for the public to take to heart, but let us not forget that we are ourselves a small portion of the public and, in this matter, the most dynamic portion. Our influence, if we take pains to exert it in all our relationships, would prove to be the germ of a very helpful reconstruction of public ideas in regard to Information service.

Short Cuts and Minor Methods

A PORTABLE red flag danger signal which can be placed in the road on either side of the work so as to give all vehicles, and especially automobiles, due notice of any wire which may temporarily be low across the highway, has been designed by Supervising Instrument Installation Foreman Emmons of the Elizabeth Sub-District.

As such a danger signal is most frequently required in cases where an installer or combination man is building a loop by himself it was necessary to design the signal both with respect to size and lightness so that it might be carried, together with considerable other material, by one man riding a bicycle or motorcycle.

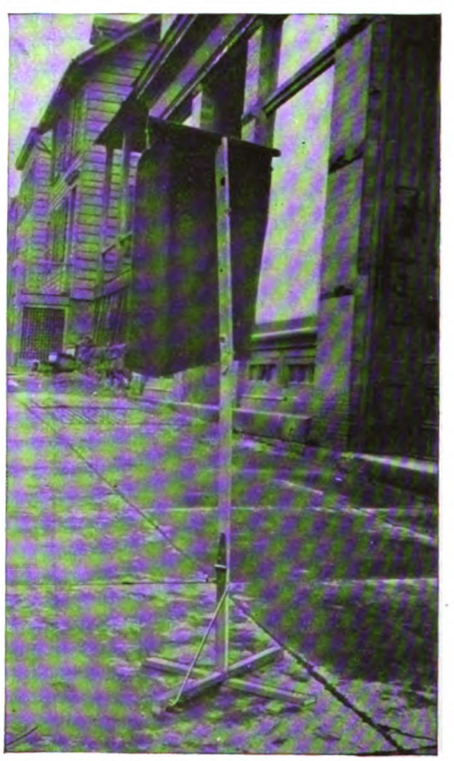


Signal Stand and Flag Ready for Carrying

When open this signal stands 46 inches high and has an 18-inch cross brace. The upright is made in three parts, two of which are 18 inches in length and one 9 inches in length. Each part is made of 1 x ½ inch white wood. They are hinged as shown in the photographs. The two upright hinged joints are braced on the reverse side by means of a 2A clamp, straightened and notched to fit snugly over a screw. The hinged joint connecting the upright to the cross base is braced by means of a standard book fastener. The screw-eye end is attached to the right end of the base, while the threaded end passes through the upright 8 inches above the base. The cross piece consists of two 18-inch lengths of 1x½ inch whitewood. The bottom piece is attached to the top with a pivot screw which allows the base to fold as shown.

The signal weighs 1¼ pounds and can be made at a cost of about 22 cents each.

G. A. MILLER, JR.,
District Plant Supt., Elizabeth, N. J.



Signal Stand and Flag in Use

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LAMPS AND KEYS

By Dorothy Thorne

Lamps and Keys

THE symbols of our work are the symbols of progress. Long before the keys of typewriter or adding machine had been thought of, long before the little greeting and farewell signal lamps of the switchboard were dreamed about, or switching keys imagined, their names had stood for light, for learning, for progress. A lamp, the dictionary tells us, is "anything that gives out light, actually or metaphorically," and a key "that which opens or prepares a way to other objects, or renders possible further progress." This figurative significance of lamps and keys is as applicable in business as in literature. For the tools of our work, in the figurative sense as truly as in the literal, are lamps and keys for us. With them we may learn to widen our horizon, to unlock the problems as they arise, and so, by alert interest, to advance in experience and ability.

Perhaps it is not altogether by chance that the instruments with which we work bear names that typify to all the world the inspiration, the experiment, the onward march of the centuries.

Our Page

IF you like the idea, Girls of the Company, we're going to have this page all to ourselves for a while. The women of the Company constitute such a very considerable portion of the workers who are making Bell service in our territory what it is—and still more, what it can be—that it may be helpful to take a corner for the discussion of our own special interests and problems.

We are calling our corner "Lamps and Keys," because these are the tools that nearly all of us work with, and the helpfulness typified by lamps and keys, which increases proportionately as it is shared, is what our page must be made to express.

The name sets a high standard for the page, so let's all be ready to write to "Lamps and Keys" and tell it what to do to live up to its name more fully—tell it what we think would make it more interesting, what questions we'd like to see it discuss, and send it gleams from our own lamps, mysteries (or just plain problems) solved by our own keys.

"A happy man or woman is a better thing to find than a five-pound note. He or she is a radiating focus of goodwill and their entrance into a room is as though another candle had been lighted."

Under the Blue Bell Banner

TWENTY-FIVE years in the service means more than just twenty-five years of work well done. That's why Miss Tompkins's anniversary which is described on another page was the cue for "Lamps and Keys" to capture some of her abundant joy in her twenty-five years with the Company and to pass along some of the inspiration of it. Not more than the smallest fraction of that joy can be confined in a printed page, but even echoes of it are bracing.

Miss Tompkins says she remembers perfectly what a bright sunny day it was when she went for the first time to the South office in Brooklyn to begin her life work. And time has proved that it was a day of good omen for Miss Tompkins and for the Company.

The loyalty of the operators is the refrain which rings through Miss Tompkins's conversation about her work. The fineness of her girls, and the dignity of the profession—these and the splendid loyalty of the Company to its workers are the chords Miss Tompkins loves to play upon. She finds no interest in speaking of her own achievements.

After twenty-five years' experience in the work that the greatest number of us are doing Miss Tompkins's message to the girls is that there is always someone who knows when a girl puts forth her best effort. When work is well done it doesn't go unnoticed, there is no "hiding your light under a bushel" in the field of operating. That is one of the things that make it encouraging and satisfactory work to do.

"When in all your experience were you most glad you took up telephone operating?" Miss Tompkins was asked. And the answer came without a moment's pause, that it was the other day when she reached her twenty-fifth anniversary. The esteem and affection which were evinced at this time, the true spirit of regard made the latest day of her service the happiest so far. "It's the wonderful spirit throughout the forces," said Miss Tompkins with enthusiasm—an enthusiasm which kindles whenever she speaks of those who work under the banner of the New York Telephone Company. The spirit of loyalty is the secret. It does not always make itself felt except in a strong undercurrent, until some particular circumstance calls it to expression. Are we *all* building up that fine spirit of faithfulness to our work and to each other? It is the true Bell spirit, spreading and deepening as each day passes.

Opportunity

NOT with our machines or material equipment, for those are uniform and at the highest pitch of efficiency, but with our natural endowments and abilities do we sometimes become discouraged or dissatisfied? Don't we sometimes think, if only that natural quickness were mine, or that brilliance or effervescence of spirit, or something else that seems to make it so much easier for the girl beside us to do her work? It's easier than not to think so, and we all do it sometimes. Here is a tale from a poem by Edward Rowland Sill that is good to read when we feel like harboring such ideas:

".....A prince's banner
Wavered, then staggered backward, hemmed by foes,
A craven hung along the battle's edge,
And thought, 'Had I a sword of keener steel—
That blue blade that the king's son bears—but this
Blunt thing!'—he snapt and flung it from his hand.
And lowering crept away and left the field.
Then came the king's son, wounded, sore bestead,
And weaponless, and saw the broken sword,
Hilt-buried in the dry and trodden sand,
And ran and snatched it, and with battle shout
Lifted afresh he hewed his enemy down,
And saved a great cause that heroic day.

"After all, the commonplaces are the great poetic truths!"

Habit's Prank

A SENSE of proportion is one of the things earliest developed by a stenographer, for the general appearance of her letter on the page is one of the important things in her work, and a clear idea of values and relations is needed.

It is in another way that the operator's sense of proportion is called into service. For when a subscriber is wrathy, or hasty, or hot (the weather does affect dispositions amazingly), the "voice with a smile" has to maintain the equilibrium of the atmosphere.

Apropos of this necessary sense of proportion is the tale of the minister who was a great user of the telephone (though he hadn't learned how to give his number) and also of the typewriter. He was an up-to-the-minute son of the twentieth century and believed in wasting no time at all, if we may believe what we read of him in a certain "funny column." He rose in the pulpit to announce the closing hymn of the morning service. His sonorous voice reached even to the farthest recesses of the great church, in these astonishing accents: "Hymn one double-o double-six. 'Art thou weary. Ditto languid. Ditto sore distressed.'"

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On The Banks of The Old Raritan

By Stewart Crowell, New Brunswick Commercial

DID you ever notice that any town whose name begins with New, like New Egypt, New London, New York and New Brunswick, is always some town? I suppose way back somewhere "there's a reason." It may be that the founders of these cities were pioneers of progress and upon settling in the new world had, coupled with the indomitable spirit of progress, their natural love of the old home town, and simply branded the new camp in honor of it.

Take New Brunswick, N. J., for instance. We're located some thirty miles out in the brush, and it pleases the city folks to poke fun at us as a slow bush league town—in fact, this mistake has been flung from the rockbound coast of Maine to the golden shores of California. Only last week a yokel from Brunswick, Ga., took a train to New Brunswick, N. J., with the sole purpose of disposing of a lot of Confederate money. He started shopping along Albany Street and at the first place he struck, the bartender, shoving the money back, said, "Why, say, stranger, you can't pass this money here; don't you know the war has been over for fifty years?" The Corn-cracker replied, "Why, yes, we all knew it was over, but we thought that you up in New Brunswick didn't know it had started yet." (Laugh here.)

Now, I am going to explain why the idea is prevalent that we don't know when the wars start and stop. It's because we don't let them bother us. Sure, we know all right when they're going to start—in fact, we are generally the first ones to the front in any of these matters. Go way back to Washington's time, when he crossed the Delaware—wasn't it Mr. Fitz-Randolph of New Brunswick who landed first? Take the first regiment recruited in the Civil War. Didn't General Janeway, who is still active among us, help in that? On the ill-fated *Maine* there were three New Brunswick boys; what other town had more? And the present quarrel in Europe. I'll bet Sayre & Fisher's Brick Yards, Michelin Tire Company, and the Steel Works have more brave men on the firing line to-day than all the banks and stock exchanges in the world put together, and yet we go right on doing business, while in the stock exchanges not a wheel turned for weeks.

Our stuff goes all over the world. The Johnson & Johnson medical articles are being applied right now to soldiers on far off battlefields. I've seen cigars made here and smoked in Asia, boots, shoes and rubbers made here and worn wherever there's ground to walk on or water to wade in, tires made here that refused to skid or be punctured even in the Himalaya Mountains. When brave Peary and Captain Scott went, one to the North and one to the South Pole, they wore underwear made here by the Norfolk and New Brunswick Hosiery Company. I crossed up with a fellow once on the upper Yukon who proudly displayed Interwoven Socks and said he never had cold feet, and I know a man down on the Panama Canal who sent a mail order up here to the Rolfe people for window screens so he would be sure to get good ones.

In some towns they complacently sit and twirl their thumbs and say, "Wait until the war is over and there will be a great business boom." Well, it's over now so far as we are concerned, and we don't wait for booms. The only war we ever have is with Perth Amboy and that's only a friendly commercial war. It's a rivalry like this: they get a new concern and promptly send an emissary up to strut around and put it over us. Say, for instance, it's a cigar factory; we say, "All right, Amboy, we see your cigar factory and raise you one—a chemical laboratory." Well, Amboy is feazed for a moment, but comes back with an ice cream factory. We see that and then go them a box factory and steel works, and so the game goes on, the people from our sister city down the river being too true and game to quit, and we being too polite to stop them entirely.

And the writer, with a fair bunch of business, besides five P. B. X.'s since the first of the month and three or four to go over next month, sends the compliments of the season to Brother Spawn and says, "Lay on, Macduff"!

Float of the New York Telephone Company in the Orange Industrial Parade

Unique Telephone Float in Orange Parade

One of the most conspicuous entries in the industrial parade held in Orange on June 19 was the float representing the Telephone Company.

The slogan—"Don't Travel, Don't Write—Telephone" was forcefully illustrated by a traveling man, with a Gladstone bag in hand, scrutinizing a time-table board, a mail carrier delivering mail and a business man seated at a desk, telephoning. Large blue bells ornamented the front part of the float. The decorations were in blue and white with a red and white rope arranged in panel effect.

The plan of this float was a departure from our previous efforts along these lines, and it is hoped that our exhibit will be as productive of business as it has been of favorable comments.

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Lunching by Telephone

By A. B. Wilson, Local Commercial Manager, Plainfield

ON the main street of Plainfield, N. J., a confectionery store, controlled by Ritz, Incorporated, acts as a caterer for the town, serves light lunches, and on Saturday evenings offers a cabaret performance. Seeing that there was nothing behind the times about this concern, Salesman J. J. Carty, of the Plainfield Commercial, determined to make it a pioneer in a new adaptation of telephone service. Having already interested the firm in our shopping and selling by telephone methods, and having arranged for them one of the most attractive window displays in the Plainfield district, Mr. Carty now approached Mr. Haff, vice-president of the concern, on a unique private branch exchange proposition.

A telephone was suggested for each table used in serving lunches and confections. The instruments were to be connected to a switchboard which in turn would be connected to the Plainfield central office by trunks, the idea being that a patron could sit down at the table, and, after looking over the menu booklet, give his order by telephone, using the code designated on the menu. The message would be relayed by the switchboard operator to the kitchen, where the order would be prepared, and the waitresses would immediately serve it. In this way, the switchboard operator, who would act also as cashier, would keep a check on the proper payment for orders served, the tables being numbered to correspond with the number of the extension telephone.

The Ritz Company, seeing the advantages of such a proposition, accepted the suggestion and contracted for two trunk lines to the Plainfield central office, a forty-line common battery switchboard, 3,300 messages and twenty-three extensions. The system has been installed and is receiving much attention and favorable comment from the patrons of the store.

The menu booklet on each table suggests that patrons use the telephone on the table before them to call taxis and to communicate with their offices or residences. Thus an added convenience is offered the patrons of this progressive concern.

The fact that a retail store of about thirty by one hundred feet has twenty-three extension stations and a switchboard might suggest that the unwisdom of overselling a customer had been committed, but the facts of the case are exactly the reverse. The concern is more satisfied with the system as each day passes, and we are now presented with the question of changing the forty-line board to one of larger size, owing to the anticipated requirement of twelve additional stations. The success of the idea is unquestioned, for the service given by the Ritz Company is beyond doubt superior to that under the old system, since the patron does not have to wait until a waitress is free to take his order, nor does the waitress have to waste time while the patron decides what he will have. The use of the telephone in giving orders leaves the waitresses free to serve the orders as fast as the kitchen can arrange them.

The satisfaction of the Ritz Company with the service is apparent from the following letter:

MR. A. B. WILSON, *Local Commercial Manager, N. Y. Telephone Company, Plainfield, N. J.*

DEAR SIR:—I wish to express my appreciation of the coöperation between your salesman, Mr. J. J. Carty, and this company, which began to show itself some time ago, when he arranged a window display for us. This display aroused considerable comment from our patrons, as well as the daily papers.

When Mr. Carty conceived the idea of our patrons ordering by telephone from each table, I readily grasped the significance of the system, as explained by him. The private branch exchange service recently installed by your company is favorably commented upon by our customers, who seem well pleased with the prompt service we are now able to render them. The new system will eliminate the services of at least one waitress, thereby paying for itself.

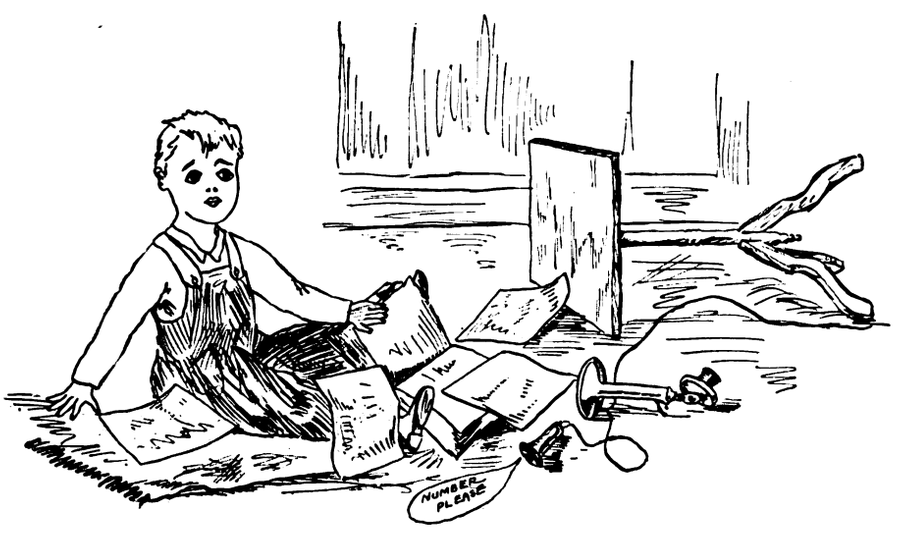
You will see from the above facts that you have assisted us in increasing our business.

I wish to heartily commend your coöperation with any concern which will take the time to look into the merits of the proposition.

Very truly yours,

(Signed) RITZ, INC.
By S. Haff, *Vice-President.*

This installation is exciting wide comment in New Jersey. Indeed, a similar concern recently communicated with the Ritz Company asking for details regarding the whole arrangement. Its further adoption is almost sure to follow, sooner or later, and then the visitor to Plainfield who never leaves town without a visit to the store may have to think twice before he repeats his recent remark that "he has traveled from Maine to California and has yet to find a confectioner and caterer who is as up to date in his method of dispensing his goods as the Ritz."



'Smatter, Pop?

My telephone has fallen to the floor
The receiver rests beside it—off the hook,
Scattered here and there, perhaps a score
Of pages lie around—they're from the Book.

The instrument is heard to click and clatter.
Soon Central will report "More trouble there!"
She does not know, of course, just what's the matter,
But—Baby's out of bed and on a tear.

R. S. KIRKWOOD, *Plant, 24 Walker St.*

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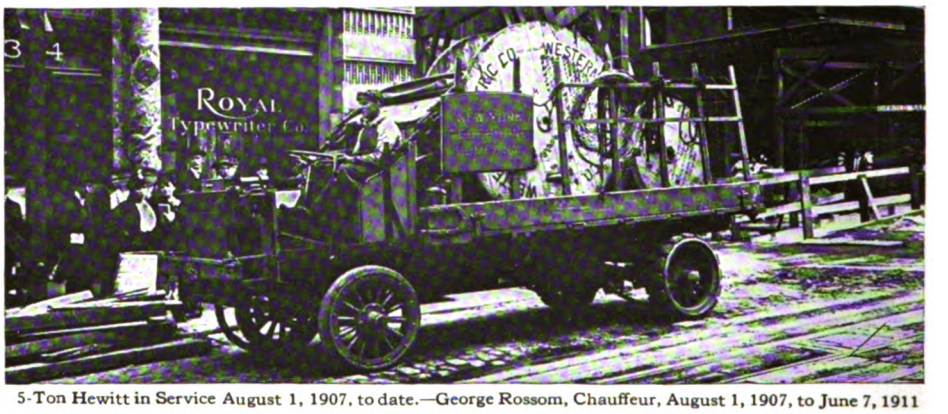
Chauffeur's Stitch in Time Saves the Automobile Repair Shop Nine

5-Ton Electric Truck in Service 1902 to August 1, 1907.—George Rossom, Chauffeur, February 12, 1903, to August 1, 1907

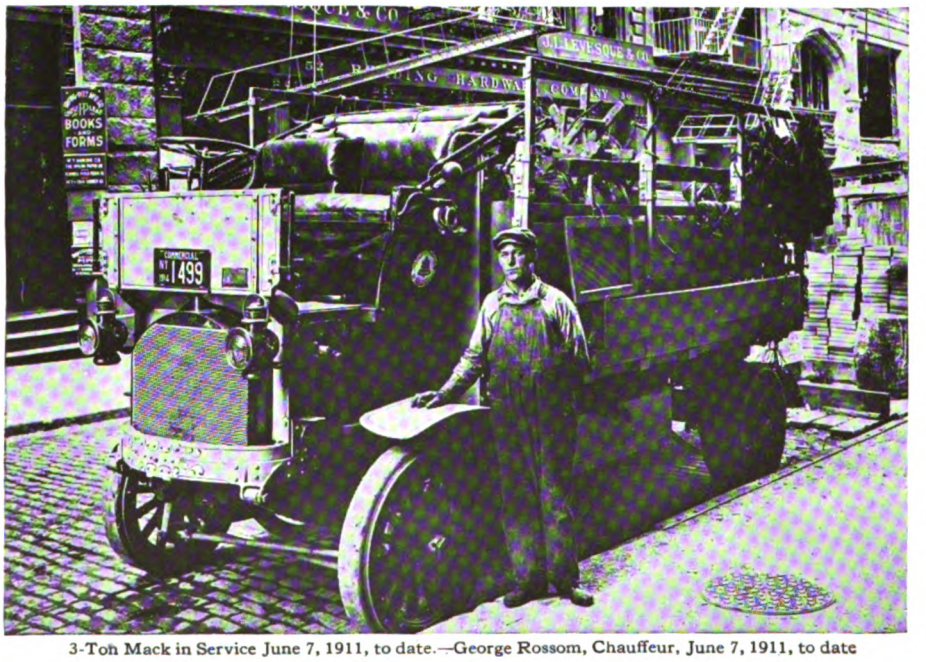
THE operating and maintenance costs of our motor trucks are in inverse proportion to the care which they receive from their respective drivers. The record of a 3-ton Mack truck in the service of the Plant Department, New York, is an example of the results produced by proper care.

This truck, known as No. 29, has been in service since June, 1911. The conditions under which it operates are severe, being in heavy traffic in downtown Manhattan most of the time and, in addition, pulling in 400,000 feet of underground cable each year. It was first overhauled in January, 1913, after *eighteen and a half months* of service. During this period of eighteen and a half months the running repairs were small, and shop mechanics made all repairs, only the winch mechanism being involved. The second overhauling was made late in August, 1914, *nineteen months* after the first overhauling. The cost of these overhaulings was less than for any other truck of the lot of 3-ton Macks placed in service in the spring of 1911.

George Rossom, the driver of this truck, No. 29, has operated motor trucks in the service of the Plant Department, New York, continuously for eleven and a half years. In the early part of 1903, he was assigned to the driver's seat on an electric truck of five tons capacity. This, the first motor vehicle purchased by the Company (in 1901), remained in service under Rossom's care until August, 1907. He then became the caretaker of the first gasoline truck purchased (a Hewitt of 5-ton capacity).



5-Ton Hewitt in Service August 1, 1907, to date.—George Rossom, Chauffeur, August 1, 1907, to June 7, 1911



3-Ton Mack in Service June 7, 1911, to date.—George Rossom, Chauffeur, June 7, 1911, to date

The splendid record of this truck and the fact that it still remains in service bear evidence to his care in driving and his constant attention to lubrication and mechanical adjustments.

The Right Idea

As a stolid young German was steering a trio of other Germans about for a day it became necessary to use a telephone. Though Fritz had had small doings with telephones, the idea was so appalling to the three newcomers that it occurred to him as an opportunity to cover himself with glory.

He stepped up to the telephone in as jaunty and debonair a manner as he could.

He rang the bell for central with something of a flourish and took down the receiver.

"Hello—is—dis—" He paused limply; he was stuck! Only a second, however. Then his self-confidence came back: "Is dis der middle?" he finished smartly.—*New York Times.*

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A Message from "Behind" the Front

LIMBURG, 7–4–15.

DEAR JIM:

Just a line to let you know I am a prisoner of war in Germany since the 20th of October, '14. I am wounded in three places, but not badly. Most of the old corps is gone. God be with them. They fought well and to the last.

Dear Brother, if you answer this will you kindly send me on some tobacco, and remember me to Ellie and the children.

Your fond Brother,
No. 8138, CPL. WM. WALSH,
18*th Royal Irish Regt., Prisoner of War,*
Limburg, Lahn, Germany.

P. S. If not delivered, please return to above.
W. W.

IT'S just a little note from Corporal William Walsh of the 18th Royal Irish Regiment, prisoner of war, at Limburg (Lahn), Germany, to his brother James Walsh, one of the boys in Telephone Blue who pilot telephone men up and down the big elevator shaft of the Dey Street Building.

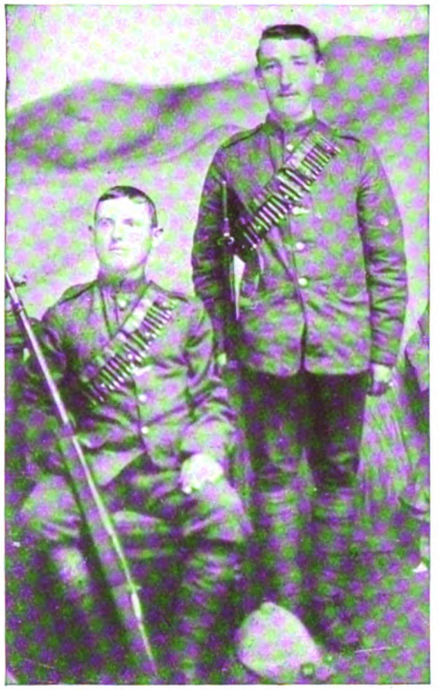
Just a little note, we say, but there's something about its travel-worn appearance and the scrawl that forms its message that gets right down under your skin, grips you hard and makes you feel—well—the way a man never admits he feels when one of the chords that registers his emotions gives forth a little twang and tells him there's something beating under his coat besides his watch.

When we happened to see the little German postcard, we had an idea that there might be a real story behind it, so we went over to car Number One of the Dey Street battery of elevators and interviewed Operator Walsh en route between the first and fifteenth floors. Amid the calling out of floor numbers and the banging of iron elevator doors, we succeeded in smoothing down Operator Walsh's bump of modesty and obtained the story for the readers of THE TELEPHONE REVIEW.

Among other things, we found that Operator Walsh, who now wears the blue of the Telephone Company, once wore the khaki of His Britannic Majesty, wore it through the hardships of the Boer campaign in South Africa, through the general engagements of Witteberger, Belfast, and Lydenburg, and later, by virtue of the fact that on two or three occasions he showed the enemy a sample or two of the fighting Irish blood that flows in his veins, he wore the King's medal on the left breast of that same old uniform of khaki.

James and William Walsh went through the Boer campaign together, but afterward, when William decided to remain with the 18th Royal Irish Regiment and follow the calling of war, James decided that he'd try the other extreme and enter the telephone business.

Corporal William Walsh went to the firing-line with the regiment at the beginning of the war. He was in the famous retreat from Mons and in the subsequent and equally famous Anglo-French advance when he fell, "wounded in three places." But in spite of the wounds that would probably occupy all the attention and thoughts of most men, the postcard indicates that Corporal Walsh has a thought left for those of "the old corps who are gone," a word for relatives far away and from whom he is separated by barriers that are far greater than the mere space of intervening miles, and a wish, a man's longing, for the joys of tobacco to make the days shorter and the monotony of prison routine less wearisome.



James Walsh, now our fellow employee, seated beside his brother William, who writes he is a war prisoner in Germany. Photograph taken at Lydenburg, Cape Colony, South Africa, during the Boer War.

But while Corporal Walsh's postcard was directed to his brother, it didn't stop there. As such things will when they happen near any part of the telephone organization, especially when they chance to bear the stamp of merit, the little postcard from the Prison Camp at Limburg, Lahn, crept up through the channels of the telephone organization until it reached the President's office. Here the appeal for tobacco must have touched a few responsive chords, for by this time Corporal Walsh is probably sharing with his brother prisoners the smoke joys that came in a good-sized box that has an express label bearing, in the space reserved for the originating address, this legend: "President's Office, New York Telephone Company, 15 Dey Street, New York, U. S. A."

Railway Telegraph Superintendents

THE Thirty-Fourth Annual Convention of the Association of Railway Telegraph Superintendents was held at the Powers Hotel, Rochester, N. Y., June 22 to 25, inclusive.

A number of interesting papers were read and discussed. Among the entertainment features was a demonstration of the transcontinental telephone service to San Francisco. This was arranged for in the parlors of the hotel, there being 144 receivers connected to the circuit; all in attendance listened in on the line while Mayor Edgerton, of the City of Rochester, Mr. E. C. Keenan, President of the Association, and a number of others talked with Mr. Peck at San Francisco. Mr. J. J. Carty came in on the line from Washington, D. C., and to show the physical possibilities of the circuit, he announced that he would call in on the line the various Wire Chiefs between New York and the Pacific Coast, which he did in the following order: New York, Rochester, Pittsburgh, Chicago, Omaha, Denver, Salt Lake City, Winnemucca, San Francisco. This was accomplished in twenty-seven seconds without any drop in transmission.

Mr. Carty was to have delivered a paper on "Telephone Development," but unexpectedly was unable to be present.

Immediately following this demonstration a banquet was tendered to the Association by this Company.

The following officers were elected for the ensuing year:

President, E. C. Keenan, General Superintendent of Telegraph, New York Central Lines, West.

First Vice-President, L. S. Wells, Superintendent of Telegraph, Long Island Railroad Company.

Second Vice-President, M. H. Clapp, Superintendent of Telegraph, Northern Pacific R.R. Company.

Secretary and Treasurer, P. W. Drew, Superintendent of Telegraph, Minnesota, St. Paul and Sault Ste. Marie Railroad Company.

The next Annual Convention will be held in St. Paul, Minn., June 20, 21 and 22, 1916.

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Using Range Finders in the Argonne

Emergency Telephone Made of Sardine Tins

Field Telephone on the Russian Front

Anxious Moments at a French Outpost

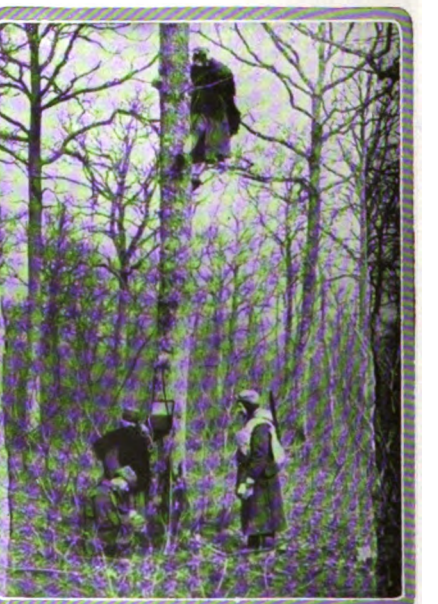
Germans in Poland Keep in Touch With Headquarters

"Trouble Testing" on the German Lines

Finding the Range Again

Telephones Facilitate Campaigns in the Woods of Alsace

Keeping Cheerful by Telephone



An Aerial Observation Post in the Forests of the Argonne

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Brooklyn Day in 'Frisco

BOTH from Brooklyn and San Francisco word has reached us that the transcontinental telephone demonstration on Brooklyn Day, Wednesday, June 30, was one of the most notable of the long series that has been given, and that the residents of Brooklyn, both those who visited the Exposition in the Eagle Party, and those who remained at home, had one of the most novel and interesting experiences of their lives.

Through the efforts of the *Brooklyn Daily Eagle*, a party of about 175 Brooklynites, including Messrs. Dickey, Gunnison, Dalzelle, Wardell, Maguire, Kaltenborn, and Haigney, other prominent citizens, and members of their families attended the Exposition, and the day before they started on their return trip they were given an opportunity to talk to their home folks. The reality of being able actually to converse with their friends and loved ones across the continent gave the demonstration the deepest personal significance for those who participated, and impressed upon them not only the marvel which was being accomplished by the telephone in transmitting speech 3,400 miles, but made them think of the marvel which is accomplished by the telephone every time they lift the receiver and talk in the ordinary routine of their daily lives.

BROOKLYN DAY

A Corner of the Room in the Willoughby Street Building of the New York Telephone Company During the Transcontinental Telephone Demonstration

The Brooklyn end of the demonstration was in the New York Telephone Company's building, No. 81 Willoughby street, Brooklyn, where the quarters of the Division Commercial Manager, Mr. H. W. Drake, were turned into an auditorium seating about 250 persons with an anteroom for the representatives of the press. Attached to each seat was a telephone receiver, so that every one was able to hear everything that was said both in Brooklyn and in San Francisco.

In Brooklyn, Mr. Drake, on behalf of the telephone company, welcomed the guests and introduced as Chairman of the Day Mr. H. M. Crist, editor of the *Eagle*. Mr. Crist on behalf of the *Brooklyn Eagle* and the guests present thanked the New York Telephone Company for the courtesies extended and introduced the formal program. Among the speakers in Brooklyn were Borough President Pounds, Judge Dike, Postmaster Kelly, of Brooklyn, Weather-Forecaster Scarr, of New York, Dr. Tong, a prominent Chinese physician, of Brooklyn (who talked in his native language with a member of the Chinese Commission at the Exposition). One interesting feature of the program was the rendering of a musical selection by the Edna White Trumpet Quartet, composed entirely of women. Miss Louise Gura, the cornet player of the quartet, is a San Francisco girl, and commenting on this fact, a San Francisco paper referred to her making her musical return to her home city in this picturesque manner of a trumpet blast across the continent.

The San Francisco end of the demonstration can best be described by quoting from a letter written by Mr. George W. Peck, the Exposition Representative of the A. T. & T. Company, to Mr. H. W. Casler, Division Advertising Manager, New York.

Mr. Peck writes:

REGARDING the Brooklyn Day demonstration. It was a notable success from beginning to end. There were about 175 in the party. They reached our demonstration building promptly on time and sat down with all the evidence of the anticipation of a good time and a rare treat. The transmission was wonderfully good. Yourself, Mr. Drake, Mr. Crist and all the others who took part in the formal talks being heard with perfect distinctness, not only by myself, but by each member of the party who was supplied with a pair of receivers.

The quartet instrumental music also came over with great clearness and was thoroughly enjoyed.

As remarks facetious and otherwise were passed between the talkers here and Brooklyn, peals of laughter and expressions of pleasure rang out from the audience.

It was indeed "an old home week" affair and the true significance to those Brooklynites here on the shores of the Pacific Ocean close to the Golden Gate talking across the entire continent, through deserts, over mountains, across prairies and through populous cities to their friends sitting close to the shores of the Atlantic Ocean 3,400 miles away, was not lost upon any of the party.

A vote of thanks was given and carried with loud cheers for the courtesy extended by the Bell System, and Judge Dickey, who is a lifelong friend of mine, being a native of Newburgh, stood up and in a clear, stentorian voice said: "My good friend, George W. Peck, ladies, is a bachelor," whereupon I had to more or less gracefully subside.

If it had not been for the necessity of being prompt and courteous in accepting the invitation of the New York City officials at the New York City building, I am sure there would have been a slim attendance there for a time at least, for most of the party seemed to be far more interested in the use of the Transcontinental Telephone Line than hearing speeches.

I want to congratulate you and Mr. Drake and the others who took part in arranging the demonstration, for although I have conducted many of them since I have been here, both city and State, I must say that yesterday's was in many respects the most successful of all. It surely was if the kindly expressions of pleasure and enjoyment on the part of those who were at this end tell the story, and I believe they do. My sincere thanks go out to you all for your help.

The attached article was written as a result of a talk with Mr. Augustus Post, of the Aero Club of America, who is here representing *Aviation*. Mr. Post visits our demonstration building frequently, so interested is he in our demonstrations.

The article is his conception of how deeply the finer sensibilities of human nature are aroused by that indefinable something that touches the heart strings. The article is a free-will offering and I send it because of its reference to Brooklyn Day.

Mr. Post's article follows:

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Human Interest in the Transcontinental Telephone Booth

By August Post

NO one realizes the touching emotional incidents that happen in the telephone booth in the Panama-Pacific Exposition; where families are united across the continent and dear friends who have been separated for months from each other are brought, as it were, face to face and lip to lip. Mothers put their babies to bed and fathers assure their families and home circle of their health and deep feeling of yearning for a moment's greeting.

One dear lady after greeting her little family in Orange, N. J., as they came up to the phone one by one at bed time; came out of the booth with both eyes filled with tears and said to Mr. Peck: "Oh, Mr. Peck, do you know what you have done for me? Why I could see my little ones clinging to their nurse and I could see her as she lifted my little babies up one after the other to the telephone to say, 'Good night, mamma' —just as I always do when I am late getting home."

To-day was Brooklyn Day, so there was a large crowd of Brooklyn people in the Demonstration Building when the time set for their exercises in the New York Building arrived; when urged to go and not be late they stayed and flocked around the receivers saying, "Hello, Mary, how are the children?" etc., and calling to those at home—veritably holding an actual meeting in Brooklyn itself instead of here in San Francisco, at the Exposition 3,400 miles away.

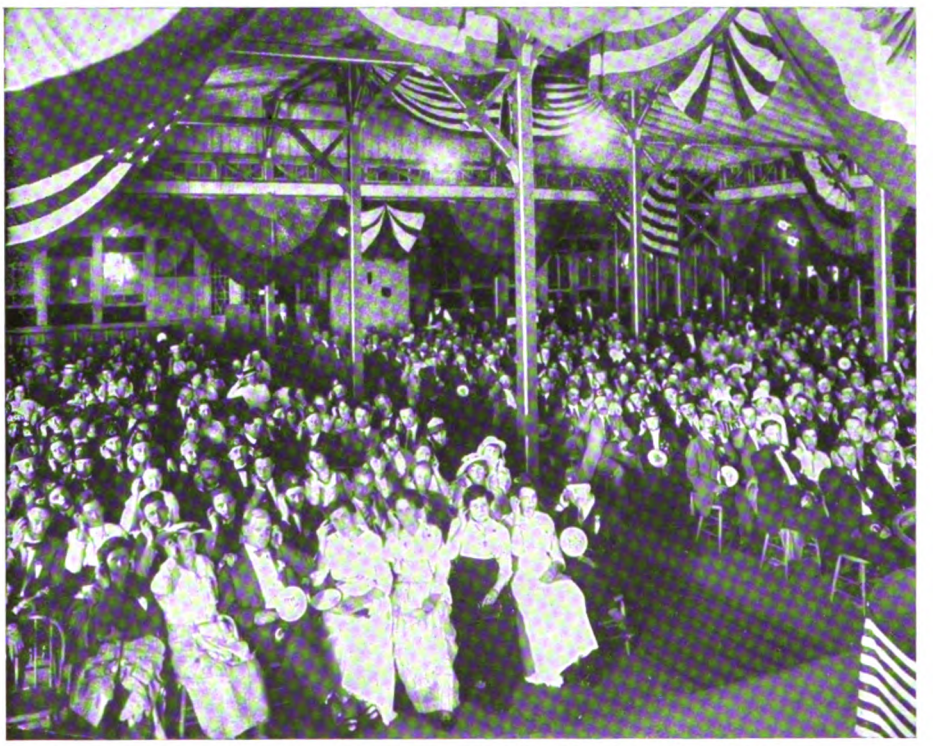
These incidents and the unfamiliar sight of a big strong man turning his head away for a moment or two while he controls his emotions before answering the query, "How does it seem to talk home?" is very often seen.

AUGUSTUS POST.

Khorassans and Pythians at Asbury Park

Transcontinental Demonstration

THE Knights of Khorassan and the Knights of Pythias held their annual convention this year at Asbury Park, delegates coming from all over the United States and from Canada. To the varied attractions of this famous summer resort was added an event which will live long in the memories of the delegates to the convention this year. On the night of July 13 more than four hundred Knights of Khorassan, members of their families and city officials, numbering in all more than five hundred, were given a demonstration of transcontinental telephone service from the beach Auditorium in Asbury Park, to the Exhibition Hall at the Exposition in San Francisco, where there were assembled a large number of members of the two orders.



Members of Dramatic Order Knights of Khorassan and Knight of Pythias Participating in a Demonstration of Transcontinental Telephone Line at Asbury Park, July 13, 1915

Mr. H. G. Kerr, Division Commercial Manager, New Jersey, presided, and after an address of welcome, introduced Mr. W. H. Hall, Local Commercial Manager, Long Branch, who delivered a lecture in connection with the motion pictures. Mr. J. A. Waterbury, President of the Asbury Park Chamber of Commerce, and the District Commercial Manager of the New York Telephone Company, Asbury Park, talked to Mr. Constant Meefe, a member of the San Francisco Chamber of Commerce. He was followed by Mr. C. E. F. Hetrick, Mayor of Asbury Park, who spoke to Park Commissioner Davis, of San Francisco. Mr. Charles E. Rice, Rochester, N. Y., Imperial Prince, D. O. K. K., next talked, and following him a message was received by Mr. Kerr from Mr. Arthur R. Arlett of San Francisco representing Governor Hiram Johnson, of California.

Everyone present in the large audience was amazed and delighted with the demonstration. Introducing Mayor Hetrick, Mr. Waterbury said:

As President of the Asbury Park Chamber of Commerce I extend the greetings of our organization to San Francisco Khorassans and Pythians.

When the transcontinental telephone line was officially dedicated on January 25 by President Theo. N. Vail, it was beyond my conception that Asbury Park would within a few months be favored with a demonstration of the talking possibilities of this line.

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When we are told that it is possible for an audience to sit within a stone's throw of the great Atlantic Ocean and converse with another audience over 3,500 miles away on the shores of the Pacific it is difficult to realize that it is true. We have several California people here to-night, and a number from all parts of the West. Some of them are a little skeptical about our really talking across the continent. They have spent days in traveling to get to the shores of the Atlantic, and now this transcontinental telephone line takes them to the Pacific in thought and voice in one-fifteenth of a second. When they recognize the voices of their friends at the other end of the line they will wonder if they are not visiting fairyland right here in Asbury Park.

It is my pleasure to introduce Mayor Hetrick of Asbury Park, "The Town without a Frown."

Mayor Hetrick said:

Through the courtesy of the New York Telephone Company, I greet you and speak for the City of Asbury Park, N. J.

Asbury Park—the premier resort city of the East—sends greetings to the City of San Francisco—the Golden Gate of the West.

Likewise it sends greetings to the State of California.

It congratulates you on the success of the Panama-Pacific Exposition. It congratulates you particularly on the artistic effects achieved in the creation and building of the Exposition. It hopes and prays that the Exposition's financial success is assured and will be as great as its artistic side.

Asbury Park is coöperating with you to attain this result. Many of our citizens are visiting you, and being entertained by you this summer and we ask for them your kind indulgence.

We of Asbury Park live in a city that is known as "The Town without a Frown." We have a brotherhood known as the "Glad Hand Society" in which every man, woman and child is a member. This society is a happy brotherhood. Its insignia is a "glad hand" of welcome, and to-night I take pleasure in extending this "glad hand" to you across the 3,000 miles of wonderful country that separates your city from Asbury Park.

I trust that at no far distant date I shall have the pleasure of welcoming you personally to the City of Asbury Park.

Cheer the Telephone Girl

ONE of the visitors taken through our Riverside exchange in Manhattan recently was Mr. Henry W. Rose, a prominent educator and lecturer, who conducts The Simplicity School on East Twenty-fifth street. Mr. Rose upon returning to his office wrote the following letter to Mr. W. A. Dalton, Local Commercial Manager, Riverside:

I cannot refrain from telling you how keenly enjoyable and illuminating was my visit to your Riverside exchange to-day—

In this world's busy marts,
With the rush and the whirl
Let us throw up our hats
For the telephone girl,

is the sentiment of

Yours sincerely,
(Signed) HENRY WM. ROSE.

The sentiment expressed in this quatrain is rapidly becoming universal as the public grows better acquainted with the virtues and services of the telephone girl.

"Poundin' Pavements"

Thoughts of a Salesman

By S. Crowell, Salesman, Dey St. Commercial

IN dedicating these lines to you, fellow salesmen, it is the most of honor that lies in my lean power to bestow. And in so doing, I am almost moved to say, as said Goldsmith of Johnson in his offering of "She Stoops to Conquer," "By inscribing this slight performance to you I do not mean to so much compliment you as myself," and I would add the flat declaration that I am with you, of you, and for you.

I have been good to you. If the voluminous manuscript I have written, of and for you, had all struggled into print, it would have been a case of Heaven help you! I generally tear 'em up about the time I finish 'em—and there are reasons, one of which is born of a fear that my wife will, by some stray chance, read the article and then—. Well, it's this way. She is a writer and teacher of no mean ability, while I, by reason of having strayed and drifted afar from the halls of learning in the days when a college claimed me but the "big out-doors" got me, have been left crippled, when it comes to writing the King's English, my speech being, as it were, freighted with the slang of the camps and stockyards, making it hard to word the thoughts clear and clean with a pen. No, I am not tongue-tied when it comes to talking—but am surely hog-tied when it comes to writing.

But to get forward to the subject of *salesmanship*. It's the keynote to success of everything in business. Experiments, inventions and the making of even so wonderful a thing as the telephone, find their ultimate victory in the return from the sales thereof.

Of course, each branch of the work is of equal importance with the other—if they didn't have the perfect productions caused by executives and Plant and Traffic, we wouldn't have anything to sell. On the other hand, if we didn't sell the goods there would be scant need of executives and Plant and Traffic.

It's not my purpose to write a column of don'ts—you all know them by heart—but if I can express one thought that will ring true and come home to you I'll be satisfied.

I can lay no claim to great success myself, but if ten years of canvass and several thousand contracts, big and little, and with the first kick or claim of deception yet to come in, I must at least have reaped some experience.

In speaking of the handling of cases and soliciting, a prominent official once said that "the ideal man was the one who acted not too foolishly, palaveringly polite, nor yet the one who acted like an autocratic, overbearing czar, but the rare happy medium who combined a cheerful politeness with a clean-cut firmness." It was good music to me, and to use a street phrase I'll "Say thanks for them kind words, mister." I'll also make so bold as to add this: That if you can, by your personality, make your prospective customer understand that the only thing you can really guarantee is that he is going to get an absolutely square deal, and that we cannot dispense special privileges, irregularities or discriminations; if your frank, thoughtful, and courteous treatment is coupled with knowledge as to how our goods can best be fitted to his needs, you will at once inspire confidence and respect, and you will get the business. Moreover, you will beget a two-fold result in that he will be a good subscriber and live up to the high ground you have placed him on.

Don't let yourself down, men. Keep up—every day looks better. There'll come a day when some of the best and biggest jobs will be filled by Commercial men; and they will be well filled, too, because our work makes big, broad men. We see every phase of the business, inside and out. We know its strength, we know its weakness. Our long, hard hikes every day may tire us, but they also help us, for in doing it we "lose not the touch of the common people"—and at no very distant day that in itself will be an asset.

Yours, till the sands of the desert, etc.,
S. C.

The Early Bird

WHILE driving through one of the streets in Pleasantville recently I noticed a moving van backed up to the curb, and the men busy taking furniture into the house. The prospect of a new station looked good to me, so I approached a gentleman on the veranda who looked important, and informed him that I represented the New York Telephone Company. Before I could say anything further, he exclaimed, "Good Heavens, can't you telephone men let a man set up his bed before talking telephone?" I explained to him the convenience and advantage of service in the country and left an appointment card. It was not many days before I received the card. When I called to have the contract signed, he stated that wherever he moved, the telephone man arrived almost as soon as he did.

EDWARD W. JACKSON, JR.,
Mt. Kisco Commercial.

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Transcontinental Demonstration for Denver Telephone Society

Telephone Society Group in Denver talking to Telephone Societies in San Francisco and New York. Left to Right: B. E. Ireson, Vice-President; F. A. Mc Connell, Secretary; E. G. Wilson, Supervisor of Leased Wire Service; A. W. Young, President; J. F. Greenawalt, Publicity Manager; J. S. Young, Treasurer.

TO the Telephone Society of the Mountain States at Denver belongs the distinction of being the first to give its members a demonstration of transcontinental telephone service, although located in the highlands a little to one side of halfway between the termini of the copper circuits. This they did by getting both New York and San Francisco on the line at the same time.

The meeting, was on June 29.

Mr. A. W. Young, President of the Denver Society, introduced Mr. J. F. Greenawalt, Publicity Manager, who made an address to the two sister societies, and Mr. B. E. Ireson, Vice-President, and Mr. F. A. McConnell, Secretary of the Denver Society, also talked.

San Francisco

More than one hundred and twenty-five members of the Telephone and Telegraph Society of the Pacific Coast met in the demonstration theater of the American Telephone and Telegraph Company, located in the Palace of Liberal Arts, Panama-Pacific International Exposition, and vied with the members of the Mountain States Telephone and Telegraph Society of Denver.

Following the formal opening of the meeting by the President of the Denver Chapter of the Mountain States Society, Mr. J. W. Gilkyson, President of the San Francisco Chapter of the Pacific Coast Society, spoke, followed by Mr. D. P. Fullerton, Mr. W. T. Teague, and Mr. George W. Peck.

New York

Owing to the conversational part of the demonstration occurring at midnight, New York time, it was thought inadvisable to undertake to get a meeting of the New York Society, and Dr. F. B. Jewett, President, and Mr. J. D. Newman, Secretary-Treasurer, were delegated to represent the Eastern organization. They were rung up at their homes in Milburn, N. J., and Montclair, N. J., respectively, and arousing themselves from their beauty sleep, both responded, "Present," and participated in the triangular greetings between the three societies.

In addition, the Denver and San Francisco societies enjoyed the usual demonstration from New York, including the roar of the Atlantic Ocean at Far Rockaway, which is given daily to the visitors in the Exhibition Room of the A. T. & T. Company at the Panama-Pacific Exposition in San Francisco.

Members of the Denver Telephone Society Listening to Conversations Between Denver, New York, and San Francisco, June 29, 1915.

Practical Appreciation

THE Progressive Cold Springs Taxpayers and Business Men's Association of Buffalo, which is affiliated with the Central Council of Business Associations of Buffalo, is striving for the kind of a town you would like to live in. It is progressive as its name implies, but the Cold Springs part of its cognomen refers to a locality, and not to any characteristic of the organization. It believes in and works for what is best for the community, criticizing where criticism is due, and commending where praise is deserved. An evidence of the latter, which our Company accepts with great appreciation, was a resolution passed by the Executive Committee of the Association at a recent meeting, and transmitted to our Buffalo office in a letter from the Secretary, dated June 12. The letter reads:

The Executive Committee of our Association unanimously decided to issue complimentary tickets to the Buffalo Business Men's Get-Acquainted Picnic, June 16, to all employees of the New York Telephone Company in the city of Buffalo.

This action was taken because of the prompt and courteous treatment *always* given for the business men of Buffalo (sometimes when we do not deserve it), and in recognition of the excellent service to the public in general of your entire system.

Kindly let us know the number of complimentary tickets you will need.

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The TREND of REGULATION

By R. V. Marye, General Attorney

"Fishing Expedition"

THE United States Supreme Court in the case of Frederick W. Ellis *vs.* Interstate Commerce Commission states in its opinion that the Interstate Commerce Commission cannot conduct a fishing expedition into the affairs of a stranger which has business connections with a common carrier, on the chance that something discreditable in the relationship may be disclosed, and that the Commission cannot compel a corporation which is not subject to regulation by it and is simply in the position of a witness interested in, but a stranger to, an inquiry to give testimony by making the corporation a party to the proceeding and serving it with notice, as such a corporation has all the immunities of an ordinary witness unless it is shown to be merely the tool of the carrier.

Rate of Return

THE Public Utilities Commission of Kansas in the case of City of Leavenworth *vs.* Leavenworth City and Fort Leavenworth Water Company, decided January 30, 1915, in discussing the feasibility of certain extensions to a water company's system, states that in view of the long life of a water pipe a guaranteed annual income of 10 per cent. of the cost of installing a main is sufficient to justify the company in making the investment necessary to construction, and that it is not necessary that the guaranteed return from a new main should be sufficient to pay a return upon its proportion of plant and other investment as well as upon the investment in the main itself, since there are blocks which bring in a return far in excess of their proportion of all these investments which would compensate for other blocks where the return is less.

Check Is Not Payment

IN the case of Aldrach *vs.* South Carolina Light Power and Railways Company, decided by the Supreme Court of South Carolina on April 30, 1915, the court held that a check offered in payment for current furnished to the plaintiff's moving picture theater was not payment and that the proffer of such a check was not, therefore, legal tender, and that the company was not liable for a breach of contract for refusing to accept a check as payment and shutting off the plaintiff's current for non-payment of the amount due for services.

Charge for Extension Telephone

IN the case of Milford D. Whedon *vs.* New York and Vermont Home Telephone Company, decided by the Public Service Commission, Second District, New York, on June 9, 1915, the Commission, after reviewing the testimony offered as to the total operating expense involved in the maintenance of extension telephones, finds that without even including any allowance for workmen's compensation, insurance, pensions, welfare work, contingent expenses, and return on investment, the estimated annual expense amounts to $4,417, and that therefore the charge of 50 cents per month for extension telephone service is moderate and reasonable as the service rendered is well worth such charge.

Rate Regulation Must Be Reasonable

THE New York Court of Appeals on June 8, 1915, in the case of the People *ex rel.* New York Central and Hudson River R.R. Co. *vs.* Public Service Commission for the Second District of New York, holds among other things, that the Commission was not justified in casting upon the railroad company the burden of proving that its increased commutation rates were just and reasonable. It appeared that the only justification for this action of the Commission was that a lower rate had prevailed for some three years prior to the increased rates in question, and the railway pleaded that it had shown reasonable cause for the advance by proving betterments to service and increases in cost of operation. The court states that the fact that rates have been lower is not proof that such lower rates were reasonable and that the fact that rates are increased is no proof of the unreasonableness of the increase, and, that as complainants were attacking the rates, the burden rested upon them to supply evidence to show that the rates were unreasonable. Furthermore, the court states that the commission wandered from its proper function of regulating rates to the function of imposing a rate policy on the company, and that the determination as to what such policy should be is the company's business and no concern of the Commission's.

The court holds further that in fixing rates on any particular branch a railroad company may not be compelled to consider merely that branch by itself, but may take into account the cost of operation and the rates prevailing over its entire system.

This case is interesting not so much because of the questions involved as because of the holding that regulation must be reasonable and that the Commission must not undertake the management of the companies whose rates it regulates.

The case has exceptional interest because the Legislature passed a bill reducing these rates while the case was pending. Governor Glynn vetoed the bill on the ground of the impropriety of the Legislature deliberately forestalling the action of the courts on a subject which it had committed to the authority of the Commission and the courts.

Utility Is Justified in Refusing to Continue Service to Patrons in Arrears and in Refusing to Allow Discounts for Prompt Payment to Such Patrons

THE Supreme Court of the United States, in deciding the case of Southwestern Telegraph and Telephone Company, plaintiff in error *vs.* Adelia P. Danaher, states, among other things, that a rule of the telephone company to the effect that it would not furnish telephone service to any patron in arrears for past service and would not accord to a patron so in arrears the discount usually allowed for paying in advance of a designated time, was reasonable. The court states that like regulations have often been pronounced reasonable and valid in other jurisdictions and that while some differences of opinion upon the subject are disclosed in reported decisions, the weight of authority sustains the reasonableness of such rule. Further, the court says that such a rule is strongly supported in reason because telephone rates are fixed and regulated in the expectation that they will be paid, and the company's ability properly to serve the public largely depends upon their prompt payment; that such rates usually are only a few dollars per month and the expense incident to collecting them by legal process would be almost prohibitive. "It has uniformly been held," says the court, "that a regulation requiring payment in advance or a fair deposit to secure payment is reasonable and if telephone companies may do this it is difficult to perceive why the more lenient regulation in question was not reasonable."

The court further points out that while the State Legislature could have declared such a regulation unreasonable it had not done so, but had left the matter where the company was justified in regarding the regulation as reasonable and in acting on that belief, and that moreover some regulation establishing a mode of inducing prompt payment of telephone rentals was necessary as the company was engaged in a public service which could not be neglected, and the protection of its own revenue and justice to its paying patrons required that something be done.

Reason for Requiring Commission's Approval of Leases

THE Court of Errors and Appeals of New Jersey, in the case of West Jersey & S. R. R. Co. *vs.* Board of Public Utility Commissioners, decided on April 22, 1915 (94 Atl. Rep. 57), states that the primary purpose intended to be accomplished by the legislative requirement that all leases proposed to be made by railroad companies should be submitted to the Board of Public Utility Commissioners for approval is not merely to ascertain whether or not in a given case the statute authorizes such leases to be made and whether or not the procedure prescribed in the statute with relation to such leases has been followed, but is, on the contrary, to provide a method for preventing railroad companies from making leases containing provisions inimical to the interests of the State or its citizens, or omitting provisions which are necessary for the protection of the public's interests.

Commission Cannot Go Outside of Complaint

IN the case of Charles E. Vallely *et al. vs.* Atlantic Shore Railway, decided by the Public Service Commission of Maine on March 8, 1915, it is held that the Commission, in acting on a formal complaint, cannot bind the parties by orders covering matters not embodied in the complaint unless there is a formal waiver by the parties or conduct clearly equivalent to an agreement to to submit to the Commission the new and different questions raised and not covered by the complaint.

Charge for Maintenance of Coin Box Is Warranted

THE Board of Public Utility Commissioners of New Jersey, in the matter of the complaint of the National Turn Verein *vs.* New York Telephone Company, decided on May 28, 1915, states that the advantage obtained by the subscriber through the use of the coin box, together with the additional duty and responsibility thrown upon the switchboard operator and the accounting department of the telephone company, warrant a separate charge for the service involved in maintaining such coin box.

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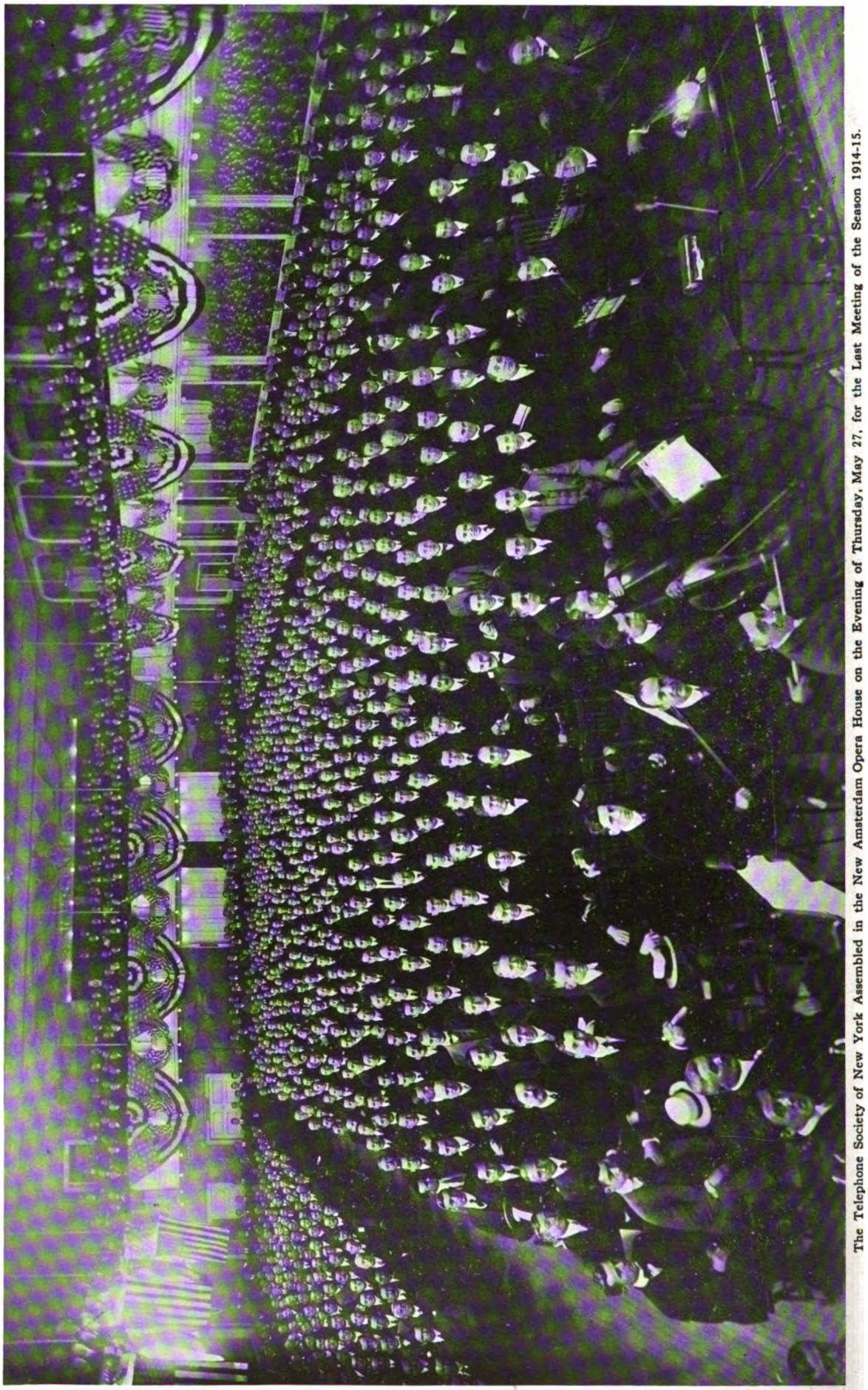

The Telephone Society of New York Assembled in the New Amsterdam Opera House on the Evening of Thursday, May 27, for the Last Meeting of the Season 1914-15.

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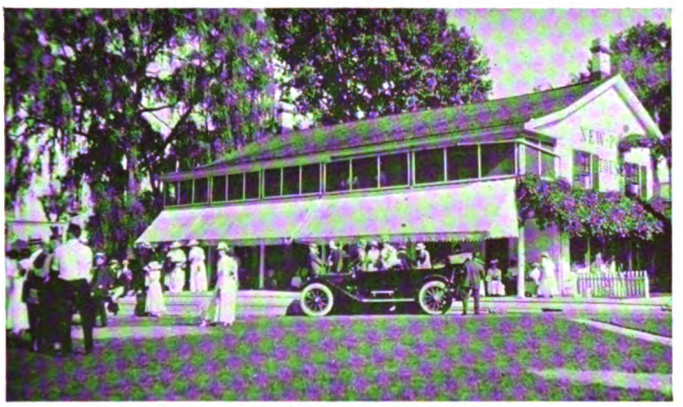
EMPLOYEES ARE INVITED TO SEND IN ACCOUNTS OF ALL ATHLETIC GAMES AND MEETS IN WHICH THEY PARTICIPATE, TOGETHER WITH PHOTOGRAPHS, IN ORDER THAT OUR REPORTS OF SUCH ACTIVITIES MAY BE MORE COMPLETE



Suburbanites Arriving at the Picnic Grounds

A Group of Happy Picnickers

Annual Get-Together Day

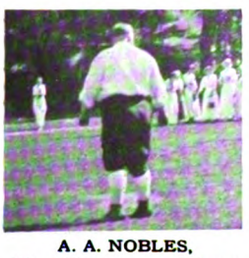
Of the Rochester District of the New York Telephone Company, June 26, 1915

Talk about your frolic,
Talk about your fun,
Talk about the way
That things can be done;
But if you want to laugh
Or to banish the blues,
Just ask any one of them
To tell you the news.

WHAT news? Why, about that picnic. Oh, it was some picnic! The best ever.

On Saturday, June 26, 1915, at 1 P.M., between three and four hundred New York Telephone Company employees from Rochester and surrounding towns, with their friends, assembled at the Main Telephone building, No. 95 North Fitzhugh street. Chartered cars were on hand and very soon the merry-makers were on their way to Newport House, on Irondequoit Bay.

The 54th Regiment band furnished excellent music. On the way to the picnic grounds appropriate songs, which were written for the occasion, were sung to popular airs. Everybody joined in singing these songs, copies of which had been prepared and distributed. By this time the real spirit of the picnic had begun.



A. A. NOBLES,
Plant Department, Winner of the Fat Men's Race

Immediately after arriving at the picnic grounds a varied program of sports started, followed by a ball game, the band continuing to play meanwhile.

At the conclusion of the ball game, the picnic-ers assembled for the real novelty of the day, a mock marriage. The band played the wedding march as the bridal party approached, escorted by the officiating clergyman, H. B. Mayo, of the Assignment Department. The bride was Tillie Nightmare, alias Jim Lyons, Plant Department. The groom was Charlie Chaplin, alias Emil Dengler, Commercial Department. The bridesmaids were M. S. Baxter, and William Sullivan, Plant Department. The best men were C. M. Hennessy and K. P. Shuart, Commercial Department. The flower girl was Mr. Emmons, Operating Agent, Pittsford, N. Y.

The bride wore a gown of crêpe de cheesecloth *en train*, with veil to match. The veil, which was arranged in cap effect, fell gracefully in folds over the bride's face. It was caught with daisy blossoms, and the bride carried a shower bouquet of daisies. The bridesmaids wore gowns of lavender and pink, with picture hats to match, and carried parasols. The groom carried a cane. The clergyman's robe was of white and he wore a large white turban and flowing beard.

It is needless to say that this part of the program made a big hit. The makeup and costumes of the participants were funny indeed, the ritual, which was specially written for the occasion, was the climax. The questions propounded by the clergyman and the responses of the bride and groom brought forth peals of laughter and continued applause from the spectators. At the conclusion of the ceremony Miss Bessie Taylor sang, "Oh, Promise Me," accompanied by the band, after which the wedding march was again played, the wedding guests forming in procession and marching to partake of the wedding repast.

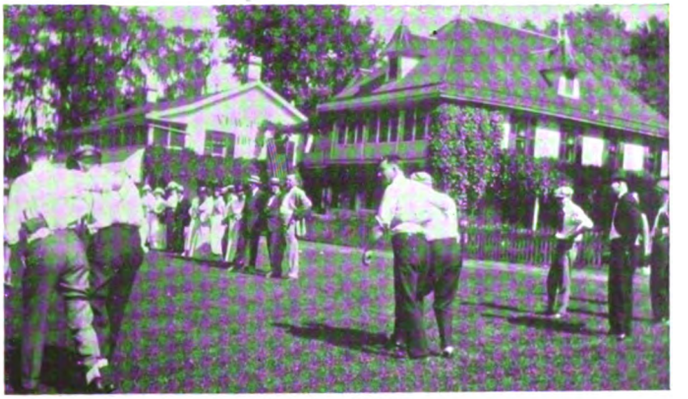
Even at this time there was no let-up to the fun. Everyone was happy, everybody glad. During the meal, songs which had been made up on the department heads and other officials, as well as the popular songs, were sung. Mr. H. L. Tracy, of the Commercial Department, directed the singing. Impromptu speeches were made by Mr. W. J. O'Hea, District Manager, Mr. H. W. Benedict, District Traffic Chief, and Mr. R. M. Bruce, District Plant Supervisor. At the close of the meal dancing was enjoyed by all.

It was a perfect day. Harmony, coöperation and good fellowship reigned supreme. Without doubt, this was the most successful outing that ever was held.

Mr. J. J. Welch, Division Superintendent of Traffic, and Mr. H. W. Gaul, Division Auditor of Receipts, both of Buffalo, were among the out-of-town guests.

Hudson Division Baseball

THE employees of the Hudson Division have organized a baseball league, with teams at Troy, P. J. Lumley, Manager, J. R. Canfield, Captain; Schenectady, W. N. Tongue, Manager, M. Priller, Captain; Albany, G. F. Ackerman, Manager, S. B. Mooers, Captain;



Three-legged Race

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Kingston, H. W. Smith, Manager, W. A. Fanning, Captain; Newburgh, S. Vail, Manager and Captain; Poughkeepsie, G. R. Smith, Manager and Captain.

Games are being played each Saturday afternoon and it is intended to continue for the rest of the season. On June 12, a game was played at Beaver Park, Albany, between Troy and Albany, the Albany team taking the honors with a score of 9 to 5. The Albany team traveled to Schenectady on June 26, and played the Schenectady team at Electric City Park, Schenectady, winning the game with a score of 18 to 1. The following games are scheduled for the remainder of the season:

July 10. Troy *vs.* Albany at Troy.
Newburgh *vs.* Kingston at Newburgh.
July 17. Troy *vs.* Albany at Albany.
Kingston *vs.* Poughkeepsie at Kingston
July 24. Schenectady *vs.* Troy at Schenectady.
July 31. Albany *vs.* Kingston at Albany.
Aug. 7. Albany *vs.* Schenectady at Albany.
Aug. 14. Albany *vs.* Kingston at Kingston.
Aug. 21. Albany *vs.* Troy at Albany.

G. F. ACKERMAN,
Hudson Division Plant Dept.

A. T. & T. Outing

THE Sixth Annual Field Day of the employees of the American Telephone and Telegraph Company was held at the office at Onondaga Valley, N. Y., on June 26. A number of the officials of the Company from the up-State offices were present as guests.

The affair was entirely informal and there was no fixed program of athletic events, amusement being furnished principally by "stunts" in which the visitors were particularly strong in carrying off the prizes.

The principal event of the day was the match for the Inter-Office Tennis Trophy which is played for annually by Valley, Buffalo, and Troy. In the preliminary play Valley defeated Buffalo 6-2; 1-6; 6-4; 6-3. Valley then played Troy, the present holders of the cup, and lost 6-3; 6-2; 6-4.

Supper was served on the lawn adjacent to the office, and all the prizes in this competition remained with the home office.

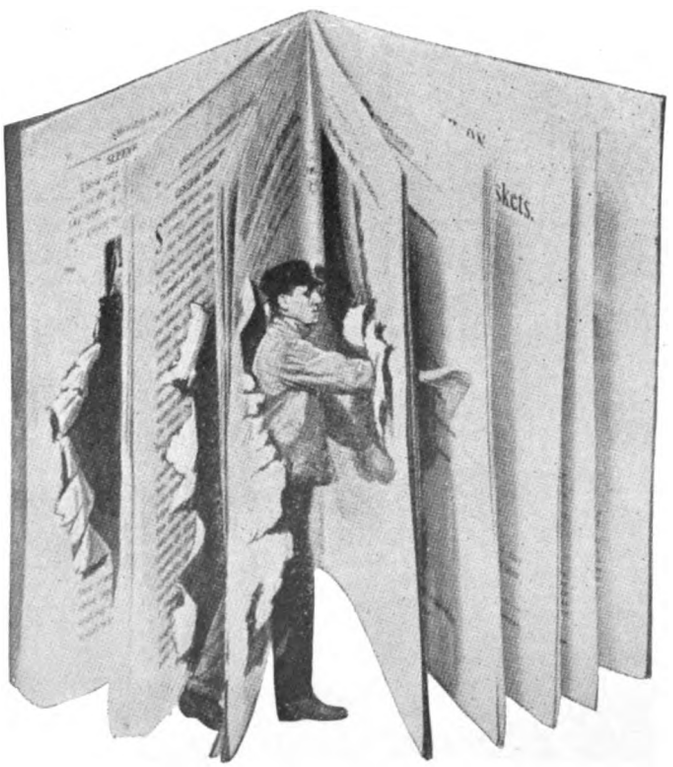
Feeding Manhattan Island

AN advertisement issued by the proprietor of a lunchroom in downtown Manhattan, having a capacity of 2,000, describes "How to Run a Lunch Business." After speaking of securing a lease, which can be obtained "for from $5,000 to $8,000 a year;" putting up "security to guarantee the payment of the rent;" fitting up the place, which costs from $5,000 up; and getting together an "organization" including "chef and crew," it says:

> About the buying, that's easy; you can order enough goods in twenty minutes over the 'phone to feed half the people on Manhattan Island.

Which simply goes to show that it is all in knowing how. The prospect of having to feed 2,000 people is enough to stagger the imagination of any housewife, but that is what this restaurant does every day, and its commissary-general says twenty minutes is sufficient time to get food enough for several million—by telephone. It is just as easy to do the same thing for two or four people at home. It isn't necessary to run a big restaurant to get the benefits of ordering by telephone.

Run Through Your Text-Books Now and Then



[Illustration from an Advertisement in an Engineering Magazine]

"STUDY your telephone text-books" was the advice from Poughkeepsie two months ago. Now Bay Shore offers a graphic hint of how *not* to "run through your text-books now and then." The picture is from an advertisement in a scientific magazine. It suggests a whole volume of good pointers on many things, the care of your books not the least among them. Mr. E. B. Sonner, Bay Shore, contributes the picture as a supplement to the article that has already appeared. The reminder is a good one.

ORGANIZATION CHANGES

Commercial Department

The position of Metropolitan Manager is abolished.

W. F. Baker is appointed Assistant to General Commercial Superintendent. Mr. Baker will assist the General Commercial Superintendent as required and will represent him in his absence.

John Lenihan, Manager, Collection Bureau, will report to Mr. Baker, as heretofore.

The position of Division Commercial Manager, Westchester Division, is abolished. The Westchester territory is added to the Manhattan-Bronx Division. For the present, H. L. Palmer will be in charge as District Manager, Westchester District. He will continue headquarters at Mount Vernon and report to J. R. Pollock, Division Commercial Manager, at 15 Dey street.

J. R. Pollock, Division Commercial Manager, Manhattan, Bronx and Westchester; H. W. Drake, Division Commercial Manager, Long Island; H. G. Kerr, Division Commercial Manager, New Jersey, and R. S. Scarburgh, Advertising Manager, will report to the General Commercial Superintendent.

All others will continue to report as heretofore.

Advertising Department

On July 1, the following changes were effective in the organization of the Advertising Department:

R. H. Street, Division Supervisor of Advertising in charge of the Manhattan-Bronx-Westchester Division, reporting to Division Advertising Manager.

D. R. Dusenberry, Division Supervisor of Advertising in charge of the New Jersey Division reporting to Division Advertising Manager.

Wm. Hutton, Jr., Division Supervisor of Advertising in charge of the Long Island Division, reporting to Division Advertising Manager.

W. F. Schmidt, Special Agent, reporting to Division Supervisor of Advertising Manhattan-Bronx-Westchester.

A. V. Sedgwick, Special Agent, reporting to Division Supervisor of Advertising Manhattan-Bronx-Westchester.

F. DeH. Houston, Special Agent, reporting to Division Supervisor of Advertising New Jersey.

Each Division Supervisor of Advertising will be responsible for the promotion of general publicity work in the division to which he is assigned. In addition thereto he will coöperate as far as possible with the commercial representatives in his division, for the Copy Manager, the Directory Manager, the Directory Advertising Sales Manager and the Editor of THE TELEPHONE REVIEW.

Central Division

Traffic Department

Miss Katherine Dunigan appointed Chief Operator of the Binghamton, Endicott, and Lestershire offices.

Miss Nellie Hennessey appointed Chief Operator at Hornell vice Miss Annette Hibbard, resigned.

Plant Department

C. O. Bruner, Chief Clerk to Division Plant Engineer, transferred to Elmira as Chief Clerk to District Plant Superintendent.

M. E. Burleigh appointed Chief Clerk to Division Plant Engineer.

F. W. Heidel, Chief Clerk to District Plant Superintendent, Utica, transferred to Division Plant Superintendent's office, Syracuse.

T. M. Chase appointed Chief Clerk to District Plant Superintendent, Utica.

Commercial Department

H. C. Boardman is appointed Acting Local Manager, Oswego, N. Y., succeeding H. F. Morgan. Mr. Boardman will report to the District Manager, Syracuse.

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NEW YORK TELEPHONE COMPANY

GENERAL OFFICES, 15 DEY ST., NEW YORK

U. N. BETHELL, President
F. H. BETHELL, Vice-President
H. F. THURBER, Vice-President
FORD HUNTINGTON, Vice-President
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Telephone Building
Buffalo

Western

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Division Auditor Receipts
Telephone Building
Buffalo

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"The High Cost of Writing"

LOOK over today's outgoing mail. There are the letters that carry answers that will not reach their destinations for a day or more. There are the letters that will keep ***you*** waiting a day, or perhaps longer, for answers. There are the letters that really didn't ***need*** to be written at all. And they have cost from 6 to 30 cents each when all things are considered!

Your ***telephone*** will save part of "the high cost of writing." It will help ***cut your correspondence costs*** and at the same time bring you into closer touch with those with whom you deal.

Don't Write—Telephone

NEW YORK TELEPHONE COMPANY

AMERICAN TELEPHONE & TELEGRAPH CO. AND ASSOCIATED COMPANIES — LOCAL LONG DISTANCE TELEPHONE — BELL SYSTEM

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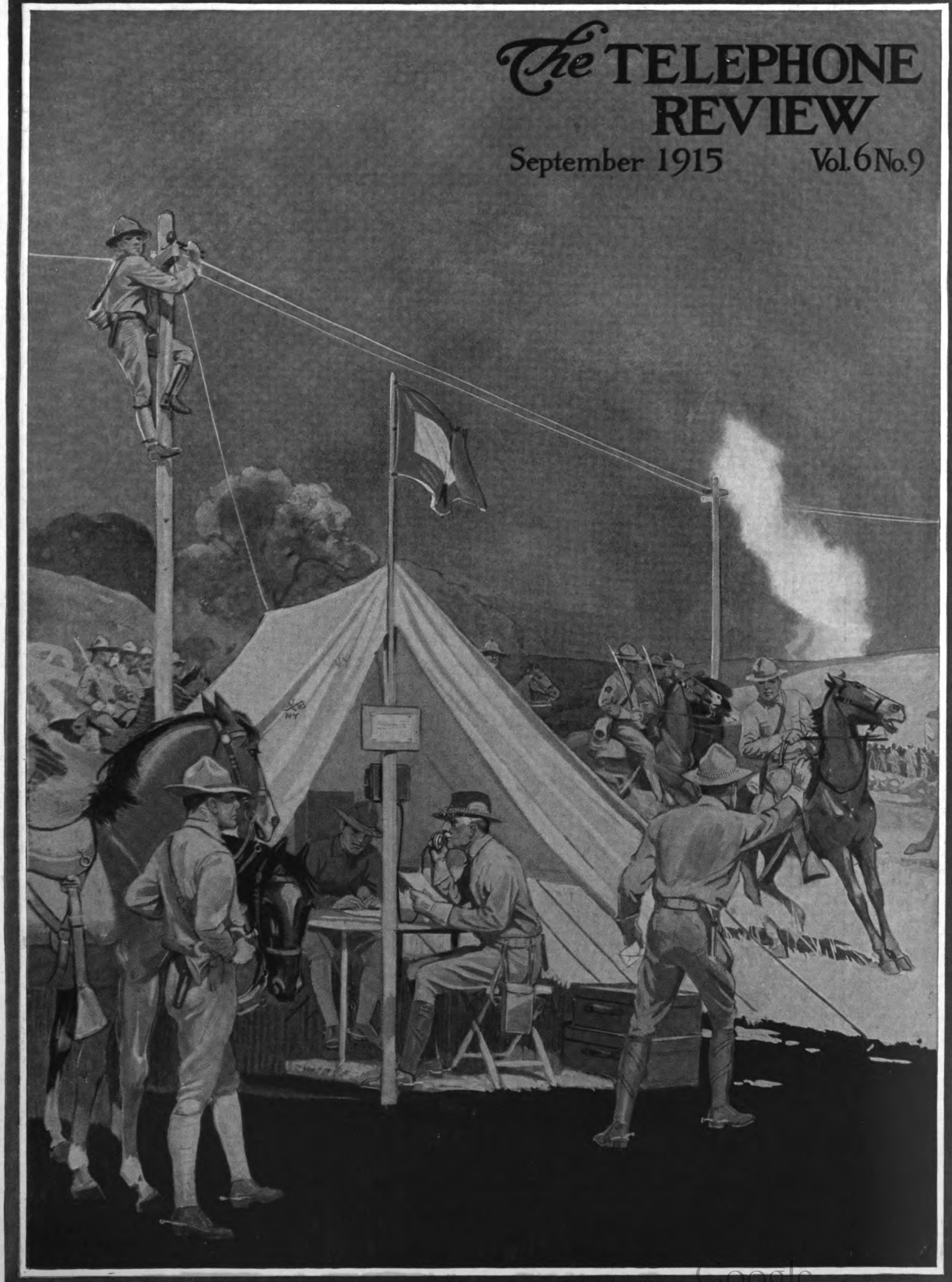
The TELEPHONE REVIEW
September 1915 Vol. 6 No. 9

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TELEPHONE IN THE MANEUVERS AT CAMP WHITMAN, SIGNAL CORPS, N. G., N. Y.

MISS M. J. GANNON
Manager of Operators' School, Western Division

Upon whom rests the responsibility of selecting operators to furnish the public with satisfactory service as well as inspiring in them intelligent loyalty to the Company and the public they serve.

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The TELEPHONE REVIEW

VOLUME·6· NUMBER·9

NEW YORK SEPTEMBER 1915

The TELEPHONE REVIEW

J. D. NEWMAN, Editor.

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VOL. VI. SEPTEMBER, 1915 No. 9

Preparedness a Virtue

PREPAREDNESS in a broad sense is a cardinal virtue which perhaps is violated by mankind more than any other in the whole category, large or small. Without inculpating our parents for any acts of omission toward us, their children, in preparing us as their successors to carry on the world's work, let us look for a moment at ourselves and see how that is true.

Take, for example, the matter of health. We know that sickness is the mastery of disease over health, and not, as many suppose, or once did, a visitation of Providence—except in so far as it is a punishment for a violation or violations of the laws of health. We know or can easily ascertain how to keep well, but knowledge alone is not sufficient—it must be put into practice. We must prepare, fortify ourselves with health to resist sickness. If we are unprepared to resist it, we can hardly expect to escape it, for disease is insidious and attacks wherever the armor of health is weak. It is not sufficient that we can say we have done nothing to make us sick. We carry around in us continually enough germs to kill us a million times in as many different ways; they are only waiting to slay us, and eventually they do, just because our time has come, which means our stock of arms and ammunition to fight disease and decay is exhausted, and we are vulnerable to their persistent attacks.

Health is the vital principle of bliss, and exercise of health.

Or again, take our success or failure in the vocation we follow. Here we have the same principle from another angle. It is the virtue of preparedness again. In school, in college, if we have been to college, in the first position we held when we went to work, in the daily routine of our duties, it is our state of preparedness which has determined and always will determine, not only our promotions, but also our failures. We do not court failure—actually and purposely want to fail—any more than we are anxious to be sick, but there are around us all kinds of pitfalls which we must guard against; the exactions of the work we have to do, and the rivalry of a great many others who are seeking the same goal that is before us. As in the matter of health all who will may keep well, so in the matter of business all who will may succeed. But in both cases it must be through the exercise of the virtue of preparedness.

Our deeds determine us, as much as we determine our deeds.

The world has come to realize as never before that peace among nations depends upon preparedness against any and all enemies. Every nation has enemies within as well as without, but even though there may be none without, there is always a horde within—pride, selfishness, ambition, caste or class distinctions, demagogues, voluptuousness, greed—all enemies preying upon the body politic. Overtaxing one's strength is as harmful to health as anemia, and an autocracy in a republic is as wrong as lawlessness. We must guard against these things as much as against a possible foreign foe, and by our nation's strength prevent ravages from within and fend off attacks from without.

Preparedness, therefore, is a virtue, one of the most important for nations and individuals, not only that we may enjoy the benefits in our own day and generation, but also that we may perform our duty to posterity. No man should be satisfied to start his children where he began life, but should aim at the highest point he can attain for them, and we as a nation should not only preserve the heritage bequeathed to us by the fathers of the Republic, but leave our country greater for what we have added to the sum total of her achievements.

Preparedness is more a matter of defense than offense, therefore. It means protection from deterioration as well as from aggression, whether it be our health, our business, or our country. It is a cardinal virtue, and it is up to us.

It is not enough merely to possess virtue, as if it were an art; it should be practiced.

No Pep

THE boss dropped in on one of his subordinates.

"How's the job?" he asked.

"Fine, thanks," was the reply.

"Like it?"

"All to the good; great!"

"Anything new?"

"No, not to speak of. Everything seems to be running all right."

"How long have you been here?"

"Seven or eight years."

"Got it down pretty fine in that time, haven't you?"

"Sure have. Runs like clockwork."

"Ever think of looking around for something better?"

"Not I. That is, not lately. I used to feel I ought to be getting ahead faster, but I guess I know now when I'm well off."

"Happy and contented now, eh?"

"Feel like I own the place, that's all."

"You said awhile ago that 'everything *seems* to be running all right.' What did you mean by that?"

"Just that."

"Oh. Any suggestions to make?"

"About what?"

"Anything."

"Let's see— No, I don't think so."

"Just happy and contented and no kicks coming anywhere?"

"That's my middle name."

Seven or eight years for preparation and not ready yet!

The next day a promotion he might have had was given to another man.

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Six Months Behind Us

AUGUST ended the first six months, or the second quarter-year, under the A. T. & T. Stock Purchase Plan.

Besides a neat little sum saved, which *might* not have been put aside otherwise, there is an appreciable increase in the amount of dividends over interest charges and a corresponding decrease in the net balance due by employees who took advantage of the offer.

We print on another page a detailed table showing how the plan works out. These figures apply to those employees only who continue their regular payments under the plan as officially announced January 1, 1915.

In a financial circular issued by the First National Bank of Boston under date of July 15, a chart of trade conditions was printed, showing a comparison of the telephone and general business with normal. Commenting upon it, the circular says:

> The remarkable stability of the telephone business under extremely trying circumstances is a most striking characteristic of the following chart. In its present stage of development, it seems well-nigh depression-proof. General business measured by a composite of valuable barometers has been much more unstable and fluctuating. It is interesting to note that the volume of telephone business at no time has dwindled more than 5 per cent. under normal, whereas general business dropped as low as 20 per cent. under normal in the early war months.

The National Guard

THE spectacle of twelve hundred prominent and successful business and professional men going into camp at Plattsburg for a month's military training is a news item which the press has treated as of the utmost importance. Why? It is not on account of the personnel of the "rookies," nor is it because a handful of men are engaged in what scores of thousands of National Guardsmen do every year without half so much notice being given to it. In New York State alone more than sixteen thousand members of the National Guard spend two weeks annually in military camp life and field work, such as is described in an article which we print in this issue.

No, the reason why the Plattsburg camp is regarded by the newspapers as such an important news item is the reawakening of the country's patriotism, of which this is only an evidence.

It might do for a while, but it is bad policy to be like the old darkey. His wife said to him: "De agent says if we ain't got de rent nex' Monday, we's got to git out." To which he replied: "Nex' Monday? Den we doan need ter worry fo' de nex' fo' days!" (*Puck.*)

The boys in the National Guard are not waiting for the notice to move, and the story of the part the telephone plays in war is shown by its use in the signal corps of the N. Y. State Militia.

We owe great appreciation to the officers and men who enabled Mr. Johnson to get his facts and for their courtesies while he visited the camp at Fishkill Plains.

So many Bell employees are members of the National Guard that the story with the pictures which have never appeared elsewhere, will be particularly interesting to them. Mr. Johnson is a member of the 23d Regiment.

Our cover design is not the result of the artist's imagination, but a combination of actual scenes at the camp.

The Testimony of Experience

THE following letter was received by our local commercial office, 9 East Fifty-ninth street:

July 1, 1915.

New York Telephone Company.

GENTLEMEN: I herewith inclose my check as per statement rendered. I note the reduction and thank you for it. I trust, however, that in the future there will be no further lowering of the rate, as the service you render to the citizens of New York is worth far and away more than it costs. It is unequaled anywhere in the world, and I for one wish to express my appreciation of it. I wish some of the kickers could have a try at the service in London or Paris, as I have, or even in some of the large places in this country. Then they would begin to appreciate what we have here.

Very truly yours,
(Signed) FRANKLIN M. STEPHENS.

Such a letter from anyone would be received with the greatest appreciation, but from a man of Dr. Stephens's caliber it has unusual force. That Dr. Stephens should take the time from his active professional duties to write such a letter with his own hand, on the very day he received the bill for which he was inclosing his check, makes it natural that we should have hastened to obtain his permission to print the letter, as showing what subscribers of his type and character think of us.

It need not be pointed out—his letter shows it—that Dr. Stephens is a gentleman of wide experience and broad views, whose knowledge of the subject entitles his opinion to be accepted without question. Fortunately his statements are absolutely in accord with the consensus of opinion the world over.

A Human Document

BETTER, we think, than any editorial we could write on the subject, and more interesting than Laura Jean or Conan Doyle, when it comes right down to cases, is the following human document, just as it reads in an announcement recently issued by the Pennsylvania Railroad Company, another great corporation which stands in the forefront of public service utilities in our great country.

To our mind it proves our contention that the columns of this magazine cannot be devoted to any better purpose than recording the achievements and describing the good work performed by the rank and file of the men and women who are proud to belong to the "noble army of Bell employees," as we have always been doing.

Last year the superintendent of one division of the Pennsylvania Railroad decided to try out a new idea. He believed that instead of posting a "discipline bulletin" each month—showing what rules had been broken and what suspensions were imposed upon delinquent employees—better progress would be made by reversing the process, creating an "honor list," and posting the name of every man whose service had been especially meritorious.

He has put this belief to a practical and thorough test. Six months of the present year show these results:

Sixty-two per cent. decrease in cases requiring discipline.

Seventy-one per cent. decrease in total days' suspension of employees.

Seventy-two per cent. decrease in wage loss to men through suspensions.

These figures summarize what has been accomplished on the Conemaugh Division under Superintendent Keiser's "merit plan."

AS TO THE RULES

No change has been made in the discipline rules of the division or in the methods of administering discipline. All that has happened is that the men are working harder to get their names on the division's "honor list" than they ever did to keep the "discipline bulletins" down.

The reason? Human nature seems to be made that way. Mr. Keiser's plan is merely a bit of applied psychology.

The older system gives prominence to the wrong men do. Mr. Keiser's system puts the emphasis on the good.

THE TWO PRINCIPLES INVOLVED

The one appeals to fear and the other to hope, and when the test was made on the Conemaugh Division hope won out as a motive for influencing the actions of men.

Here is another way to look at it: Under the system of "discipline bulletins" it is necessary for a man to get himself into trouble before he does anything that can serve as an example to others. Under the Conemaugh Division "merit plan" he becomes an example simply by doing right, and the better he does his duty the more prominent that fact becomes.

It is really much the same as the difference between telling a man what not to do and telling him what to do. "Don'ts" no doubt have their place and value, but by themselves they never accomplish positive results.

Making It Emphatic

She sailed into the telegraph office and rapped on the counter. As the clerk came forward to meet her he remembered that she had been there about ten minutes before. He wondered what she wanted this time.

"Oh," she said, "let me have that telegram I wrote just now; I forgot something important. I wanted to underscore 'perfectly lovely' in acknowledging the receipt of that bracelet. Will it cost anything extra?"

"No, ma'am," said the clerk, as he handed her the message.

The young lady drew two heavy lines beneath the words and said:

"It's awfully good of you to let me do that! It will please Arthur ever so much."—*Youth's Companion.*

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Mayor Mitchel of New York Addressing the National Guardsmen at Camp Whitman

At Martin's Mountain With the Telephone

By W. E. Johnson, Advertising Department

"THE Battle of Martin's Mountain!" sounds warlike enough to suggest a page ripped from a history of the Civil War—makes you think of the acrid fumes of burning powder, the concussion of bursting shells, the hoarse shouts of men locked in the throes of a mighty conflict, the zip—zip—zip of bullets flying overhead—makes you think of Bull Run and all the other little arguments that Old Glory has passed through—makes you think of—

What's that you said? "There *were* no *bullets* at Martin's Mountain?" True enough, but neither were there *telephones* at Bull Run, and you'll have to admit that that little fact affords sufficient excuse for mentioning both battles in the same breath, and, incidentally, for our story.

Detachments of the National Guard of New York State and of the regular United States Army came this summer to Fishkill Plains for maneuvers such as every State endeavors to hold each year.

A great khaki-hued city sprang up mushroom-like over night, rearing its canvas walls above the level of the gently rolling tableland. And like a city, too, Camp Whitman, for that was the name they gave it, was equipped with every necessity for the harboring of the thousands of soldiers who formed its population. It possessed its systems of water supply, of sanitation, of policing, and of telephonic communication, the latter built, maintained, and operated by the First Battalion, Signal Corps, National Guard, New York.

Radiating from telephone headquarters in the center of the camp were telephone lines that stretched out in every direction, connecting up every unit of the camp force, facilitating its management, and making it possible to attend to the multitude of camp duties with a minimum expenditure of time and effort.

Public telephones were installed, too, enabling the citizen soldiers to communicate with their homes and offices, and thus making possible the attendance at the camp of many who could not neglect their affairs.

There were regulars here and militiamen, too. With the regulars this was business, part and parcel of their daily existence, as much a part of their work as the furnishing of good telephone service is a telephone man's work. But with the militia it was different. These men were here, not so much for the good time that a tour of camp duty affords, as for the valuable instruction they would receive, instruction that would stand them and their country in good stead if the time should come. These were the men on whom the country would have to draw to officer the great volunteer army that would be recruited in an emergency.

Wearing the unadorned sleeves of the privates, the chevrons of the non-commissioned officers, and the puttees, silver bars, and other insignia of the officers, there were clerks, lawyers, salesmen, doctors, brokers, financiers, men from all walks of business and professional life, and that, of course, includes the men who build and maintain the country's system of telephonic communication. Telephone boys were on the job in plenty. Some were in the infantry, some in the cavalry, others were attached to the Field Hospital and Ambulance Corps. But many had chosen that branch of the service for which they were best fitted by the work they do every day, the Signal Corps, where they build the telephone and telegraph lines

The Tent City of the Citizen Soldiers. Signal Corps Quarters in the Foreground

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Signal Corps Cook Tent. Scene Between Meals

and operate them and the various other means of communication that tie an army together.

The great feature for each detachment of troops during its stay in camp was a mimic battle between divisions known as the "Red" and "Blue" armies.

Such a battle took place while the writer was on a visit to the camp as the guest of the Signal Corps.

Just as the sun was peeping over the mountains and rolling the morning mists up the slopes, the radio station up in the hills at Blue Army Headquarters picked a message out of the ether:

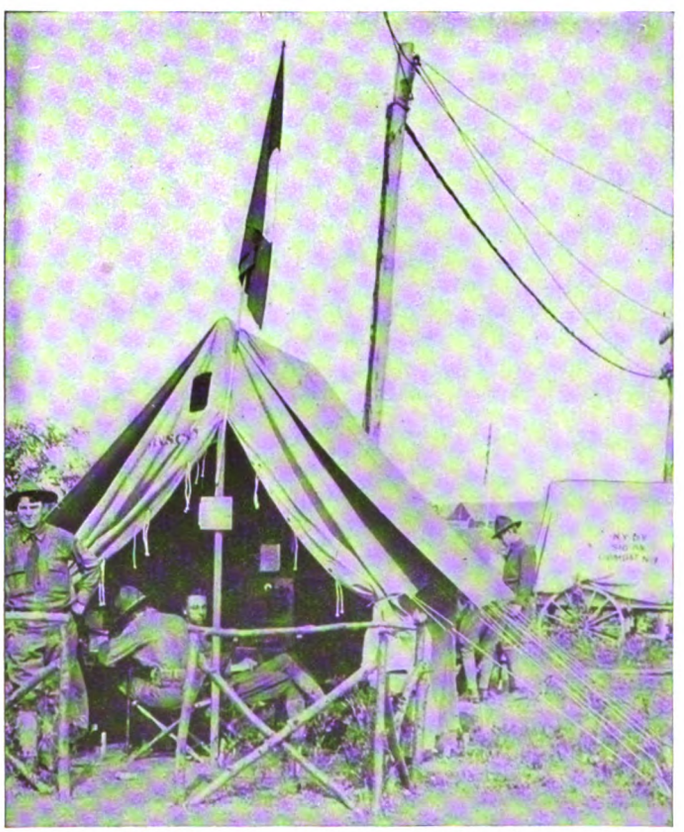
"Red Force—all arms—reached Beacon last night."

Cable Entrance to Telephone Headquarters

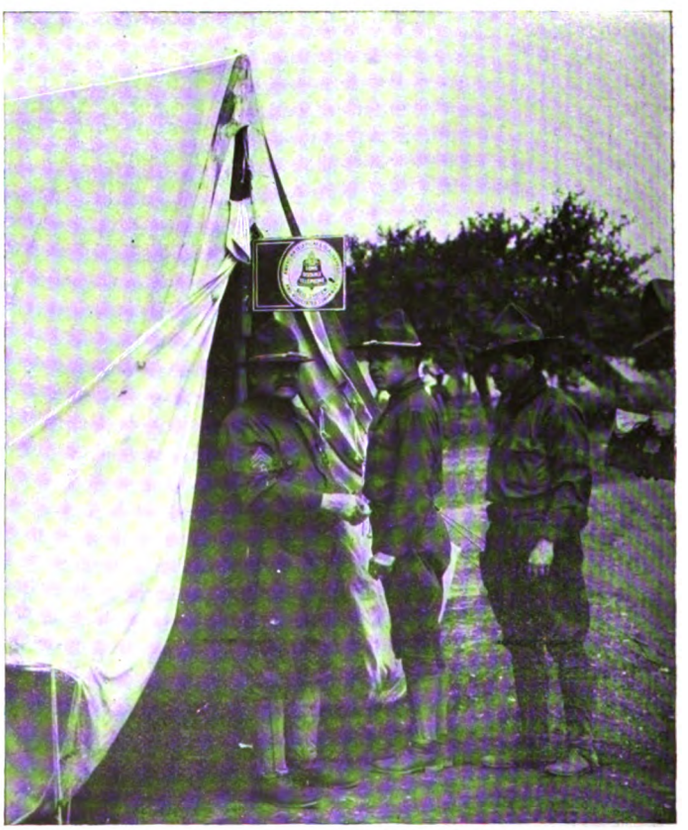
The Red Force at Beacon, only twelve miles away, a mere few hours' marching distance to the south and west!

An orderly jumped to grasp the written interpretation of the dots and dashes that the wireless antennæ had pulled from the air, and shouted the few short words into the transmitter of a field telephone, the wire of which ran along the ground and disappeared in the maze of tents beyond in the direction of Headquarters. Then—

The shrill notes of a bugle split the morning air and awakened myriad echoes in the surrounding hills. Other bugles, far down the line to the right and to the left, took up the call and the hills rang with a veritable jumble of sounds



Front View of Telephone Headquarters, Showing Camp Switchboard and Telephone Line Constructed by Signal Battalion, Reaching all Parts of the Encampment



The Local and Long Distance Lines of the Bell System Enable the Troops to Communicate With Their Homes, Offices, and Sweethearts

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Telephone and Telegraph Section of Signal Corps About to Ford a River

The Signal Corps, with its system of communication, was at work issuing the orders that would mold this great mass of men of all arms of the service into one well-oiled and smoothly working fighting machine.

Everywhere about the camp officers were shouting hoarse commands, and men were rushing to do their bidding.

Over at the left a bugle call, "Boots and Saddles," brought a cavalry troop on the double-quick to the picket line and their mounts, and in a few minutes they were clattering out of camp to the tune of creaking saddle leather and clanking saber. At their heels rode a section of the Signal Corps, with a reel cart laying telephone wire along the side of the road as it proceeded, in order that the Blue Army commander might keep in touch with every movement of the head of column and possibly of the enemy beyond.

that brought men tumbling from their tents, rubbing the sleep from their eyes and buckling on their equipment in anticipation of a hurried departure.

There was a lively scene at Headquarters. Officers were galloping up and holding impatient mounts in check while they leaned from the saddle to catch hurried commands. Orderlies were arriving with messages and hastening away with others. Close by a soldier lay prone on the ground, shouting orders into a telephone transmitter. Others were pounding out messages in telegraphic code on the combination telephone and telegraph instrument that the signal man carries. On an adjacent hilltop a soldier was silhouetted against the morning sky, a signal flag in either hand wig-wagging to some unseen unit of the Blue fighting force off in the distance. From a field off to the right, an aeroplane took to the air like some great, lumbering bird, and was off into the south to search out the enemy's line of advance, to estimate his numbers, and to send this all-important detail back by wireless to the field station where the telephone would probably relay the message to headquarters.

Off to the Battle

The "Seventh's" Band Playing the Troops on Their Way

A long line of infantry went swinging by, the swish—swish—swish of water in the canteens of the troops keeping pace with the tramp, tramp, tramp of their plodding feet.

A battery of field artillery went rumbling out of camp, their springless gun carriages and caissons swaying from one side of the rough road to the other, the drivers whipping up their horses and calling and coaxing them to throw their weight into the harness.

The army was on the march to Martin's Mountain.

Twenty-third Regiment on the March

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Their Faces Tense With Excitement, the "Blues" in the Trenches Awaited the Word, "Fire!"

On Came the "Reds," With Fixed Bayonets and a Wild Yell!

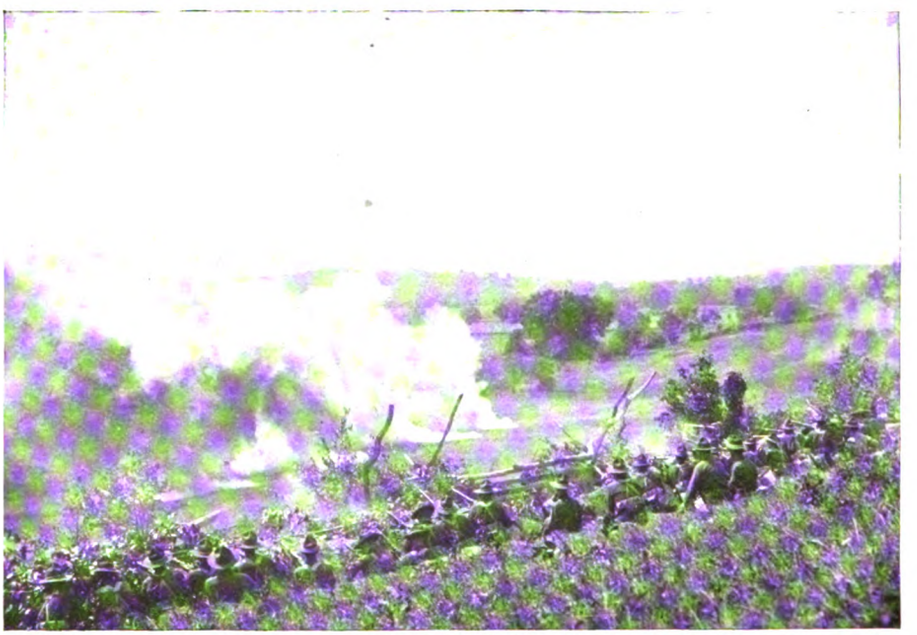
At Martin's Mountain

To the north and south stretched a long low-lying chain of wooded hills. To the west lay a gently rolling plain dotted here and there with little clumps of trees and an occasional lonely farmhouse. Behind loomed the great hulking p[illegible] of rock that was, if the Blue Army had its way, to mark the high tide of the Red invasion. This was Martin's Mountain.

The driver who had brought us to the summit shaded his eyes with his hand as he peered into the distance. Then he pointed below to the south.

"There they are now, the advance guard of the Blue Army." There was just a mere pall of dust hanging over the road in the distance at first, and then minute specks that we knew to be the vanguard of the Blue forces appeared making for the base of the mountain on which we stood.

In a minute squad upon squad, company upon company, unfolded



Suddenly the "Blues" Exploded Their Mines and the Earth Upheaved

Major General O'Ryan and Staff. Signal Corps Operator at Field Telephone Receiving Reports and Transmitting Orders

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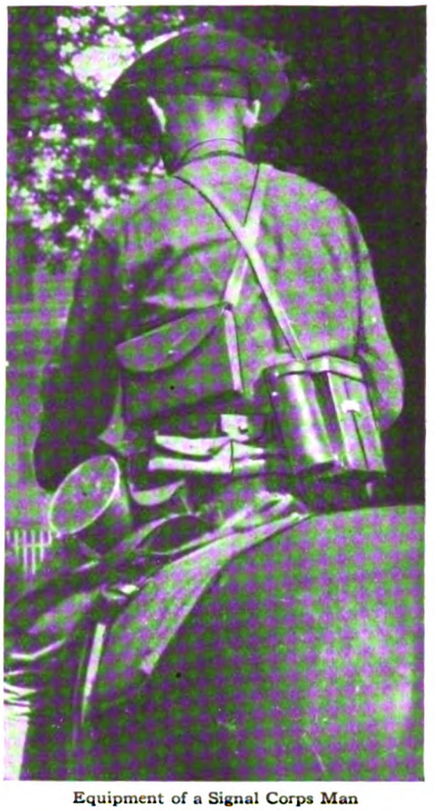
Hiking It Back to Camp After a Strenuous Day



Equipment of a Signal Corps Man

itself before our eyes. They arrived at the foot of the mountain, and little units began to detach themselves from the main body and travel westward, as outposts, in the direction from which the enemy was expected to advance. A wagon also detached itself and made for the west. Behind it rode a man on horseback with what appeared to be a lance in his hand.

"What's that? Artillery?" we inquired, surprised that part of the battery should take to the open country beyond when here on the mountain there was so much good cover. "No, not artillery," came the reply. "That's the Signal Corps reel cart laying telephone and telegraph wire. They're going to connect the outposts with Headquarters; that'll be up here on top of the mountain. Look down there now and you'll see another reel cart coming up laying wire on the way. That man riding behind with the pike lays the wire at the side of the road, and conceals it in the bushes as much as possible as he rides."

The whole column was in sight now, and infantrymen, who had already reached the base and thrown off their heavy equipment, were bending their shoulders to pick and shovel, digging the trenches that would protect them from the enemy's fire.

We rode down the mountain and found a man lying in the road. We thought he had fallen from the effects of the heat until we chanced to hear him call out, "Hello, C, do you get me all right?" He was testing the telephone line that even then the Signal Corps was in process of laying.

Leaving the proposed line of trenches at the foot of the hill behind, we followed across country in the path of a reel cart that had gone on west to connect up the outposts. They had ridden hard, and when we came up to them they were among a little clump of trees that fringed a good-sized stream, making preparation for running the wire to the further bank. Just about one hundred feet above, the stream was spanned by a bridge, but the signal men, in spite of this easy means of crossing, were evidently ignoring it and planning to run their line across the river.

"Wouldn't it be easier to cross the bridge?" we inquired half hesitatingly of the officer in command. These men seemed to know their business so well that for a mere outsider even to make inquiry seemed the rankest kind of impertinence.

The officer smiled and pointed out a marking that could just be discerned on one of the posts at the east end of the span.

"Destroyed by the enemy," he said finally. "That is, destroyed theoretically. We're up pretty close to the Red outposts now, and we can expect to get in touch with them at any moment."

He stopped suddenly to adjust his field glasses and train them on the hills that formed the western wall of the valley.

"There they are now—one of their outposts up in the hills." He offered the glasses for our use, but for a full minute we could see nothing. Then an infinites-

Major W. L. Hallahan, Chief Signal Officer, National Guard, State of New York (on black horse in front), and the Signal Corps Marching

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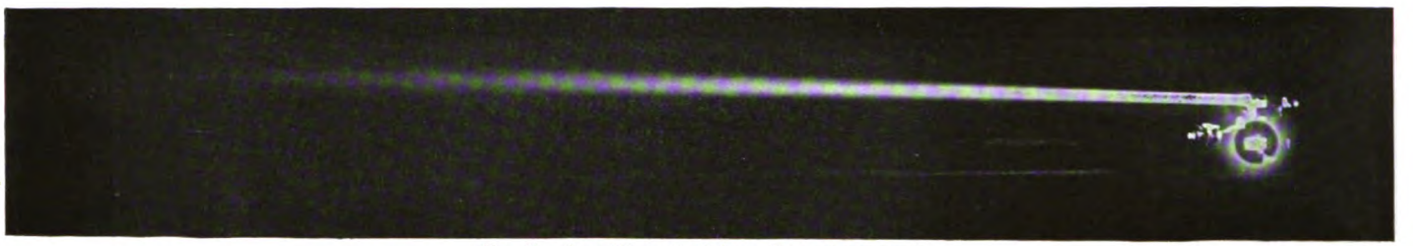

Signaling from "Auto-Car" Army Searchlight Truck

Signal Man Stringing Telephone Wires

"Regulars" in the Rain

Field Telephone in Use

Camp Wireless Station, Showing Generator

Aeroplane Scouting Over Enemy Lines

Field Wireless Station

Telephoning to Artillery the Result of Range Finder's Observations

imal speck of red moved along the side of the distant hills and stopped just where a patch of sunlight marked a clearing among the trees. Another and then another speck joined it, and there was a noticeable pause while the men who wore the Red were apparently engaged in adjusting some sort of an instrument. There was a succession of flashes of varying lengths from the hillside where they stood, as though a small boy were mischievously reflecting the rays of the sun by means of a hand mirror, then a pause and an answering series of flashes, not quite so strong but plainly discernible, far to the south.

"The heliograph," the officer remarked. "They probably saw us come in here and they're sending word back to their headquarters that they're in

Heliograph Detachment Receiving and Sending Signals

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Breaking Camp

touch with our outposts. We'll have to do the same thing."

He walked to a horse that was standing nearby, detached what appeared to be a small brown medicine case from the saddle, opened it, unwound a long black cord with a heavy sharp-toothed metal clamp at the end, and proceeded to force the teeth of the clamp through the insulation of the wire that the reel cart had unwound on its trip from the base of the mountain; a second cord had a long copper pin attached, which he forced into the ground. In another moment he had a head receiver clamped to his ear and was shouting into the transmitter of a field telephone:

"Red army outposts on first range of hills west of turnpike. Position of Blue outposts probably known."

Standing down in the valley in the shadow of the hills that loomed up on either side, this little demonstration of the use of the telephone, unimportant enough in itself, perhaps, seemed all too unreal to us who had been accustomed to using the ordinary desk stand from the comfortable recesses of an office chair. There was something that bordered on the uncanny and the mysterious about talking over this slender-looking thread of black wire that stretched along the ground and disappeared in the bushes behind, and we were instilled with even greater respect than ever for the little instrument that made it possible for the commander of the Blue fighting machine to know just where his enemy was within thirty-odd seconds after one little unit of his great army obtained the information, and made it possible also to know that his outposts had been seen by the enemy and to anticipate the next move of the opposing forces.

Leaving the section of signal corps men behind, we walked back along the length of telephone wire in company with the signal officer in the direction of the base of Martin's Mountain.

"What would the result be as far as warfare is concerned," we inquired, "if there were no telephone or other efficient means of communication?"

The officer stopped and pointed to the defensive position far away at the base of the mountain.

"*That* would be impossible," he said. "I mean the extreme length of the line that the Blue army is defending now. Of course, a number of defensive units without the aid of any means of communication might in a more or less efficient way defend the position, but one big unit fighting under the direction of one commander with a single purpose and with a single goal, *never*.

"There never was a time," he continued, "when a commanding officer could do without some means of communication. In the old days they used mounted orderlies, and often the messages were delivered by word of mouth because of the danger that would result if a message was written and the orderly happened to be captured. Even if the orderly was not killed or captured before he reached his destination, the chances were good that the message he carried was delivered incorrectly, and equally good that it was misunderstood by the officer who received it. Then again, it required so much time for a mounted man to travel from one point of the field to another that often the message would arrive after the tide of battle had changed. Then the message might become negative in value, or if followed, bring disaster.

"Another thing, in those days it was necessary for a general to occupy an exposed and usually elevated position in full view of the contending forces in order to see as much of the battle as possible. Besides the personal risk involved and the effect that his death or disablement might have on the fortunes of his side, his range of vision was necessarily limited, his decisions were based upon partial instead of complete information, and with the din of battle around him his judgment was influenced by what he could see and by the impulses of a moment.

"But that's all a thing of the past now," he went on, "It probably ended with the advent of the Russo-Japanese war, when with his army before the gates of Port Arthur, General Kuroki sat in a little cottage ten miles back of the firing line and directed his entire army by using the telephone. During lulls in the fighting he played chess and chatted with his officers. And Kuroki wasn't there because he wanted to get out of harm's way either. He wanted quiet, absolute quiet; he wanted to be alone with his thoughts; he wanted to consider dispassionately every move that his and the enemy's troops made; he wanted to get away from the enthusiasm and the fighting spirit that would hamper his good judgment if he were on the firing line; but above all he wanted to be so situated that he would be able to obtain news of what was happening along the entire battle front instead of a mere part of it, and it was the telephone together with the various other means of communication that solved his problem and enabled him to win."

We arrived at the base of the mountain. From a short distance off everything about the place seemed as normal as when the defenders had come just a few hours earlier. But after we

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had climbed the narrow path up the mountainside we saw that a transformation had taken place. To right and to left as far as the eye could reach ran two long lines of trenches filled with men quietly resting on their arms. Up on the hill a battery of artillery lay with its formidable looking guns masked by the foliage of the trees and bushes. Further up the hill a field radio station reared its antennæ into the air. To the left, and walled about by protecting hillsides, was the field hospital and field ambulance corps. Closer to the firing line, but under the wall of the mountain, the ammunition train lay ready to supply food for the guns that were to ward off the enemy's attack.

And between all these points, all these arms of the service and headquarters, there ran a network of telephone lines. The plans for the reception of the invaders were complete.

The Battle

The sun had started its descent into the west. Not a breath stirred on the hillside or in the trees above. Over the plain in front the heat waves were dancing. Bushes that had been clipped earlier in the day to mask the newly-dug trenches had already begun to wilt.

Not a sound arose from the hillside. Yet scores of men were down below in the trenches sweltering and waiting.

Then suddenly a Signal Corps man down at the right held the telephone receiver closer to his ear and listened intently; he scribbled hurriedly on a piece of paper. Another soldier grasped the message and bending low under the screen of bushes, to prevent observation by the enemy, rushed off in the direction of headquarters. The enemy was coming.

A moment later a detachment from the cavalry outpost could be seen coming across the plain, in company with the Signal Corps reel cart, which was rewinding the telephone wire that had brought the news of the enemy's approach.

Off in the distance, where the sun marked out a clearing in the little clump of woods that screened part of the enemy's advance, a number of dots appeared for a moment and disappeared in the woods on the other side. Occasionally at other points along the distant fringe of trees a blur of red would show for a moment and would be gone, leaving one to wonder whether it was the enemy or some mere phantom conjured up by the eyestrain of constant watching. Then, suddenly, from a hundred different points along the line came the general advance. Enemy troops were pouring out of the woods on to the plain below, seeking such cover as the character of the ground provided and plodding steadily onward.

But while hundreds of eyes watched the advance, not a head showed above the sky line or a trench top, not a sound revealed the watchers.

The enemy was closer now. At what seemed to be eight hundred yards the skirmish lines could be seen forming and the general advance was on. Walking across covered country when possible, and running across open fields when no cover was to be had, they came along, a straight single line of men in perfect order and with a swing to their stride that seemed to defy the heat. Now and then a slight roll in the plain hid them from view for a moment, but they were advancing, advancing steadily. At five hundred yards there was a pause in the advance, as the attackers lay prone and their first volley echoed from the valley walls. On they came again, one section of the line advancing under the fire of a number of other sections, the continued roll and rattle of musketry coming across the plain like rat-a-tat-tat of some giant snare drum.

But not a sound, not a shot, from the defenders. To all appearances the attackers were firing at the bare face of the mountain.

Nothing seemed more peaceful than this little hillside; nothing seemed more devoid of life; nothing indicated that a whole division of the Blue Field Army lay watching and waiting. Yet all the time that the enemy was advancing across the open country to the west, certain slender black threads of wire running here and there about the slope and up through the trees above, were alive with the messages from the front to the master mind beyond the brow of the hill. Soon those same black threads of wire would bring back from Headquarters the word that the defending troops were waiting for, "Fire!"

On came the attackers, firing at every pause. Men in the trenches looked back to their officers appealingly, as if begging for the word that would enable them to train their guns on the horde in full view below.

Suddenly, "Fire!" came the command.

Almost as one shot the volley rang out from one end of the line to the other and turned the peace and quiet of the hillside into one great inferno. The rifle fire rose and fell like the roll of thunder that crashes somewhere overhead and goes rumbling off into the distance in slowly decreasing volume, only to come back, apparently, and rumble loudly once more at the scene of the first crash.

True, this wasn't real warfare. But the war spirit was there just the same. Nothing was lacking but the bullets. The men in the trenches were keyed up

The Signal Corps on Parade in the City

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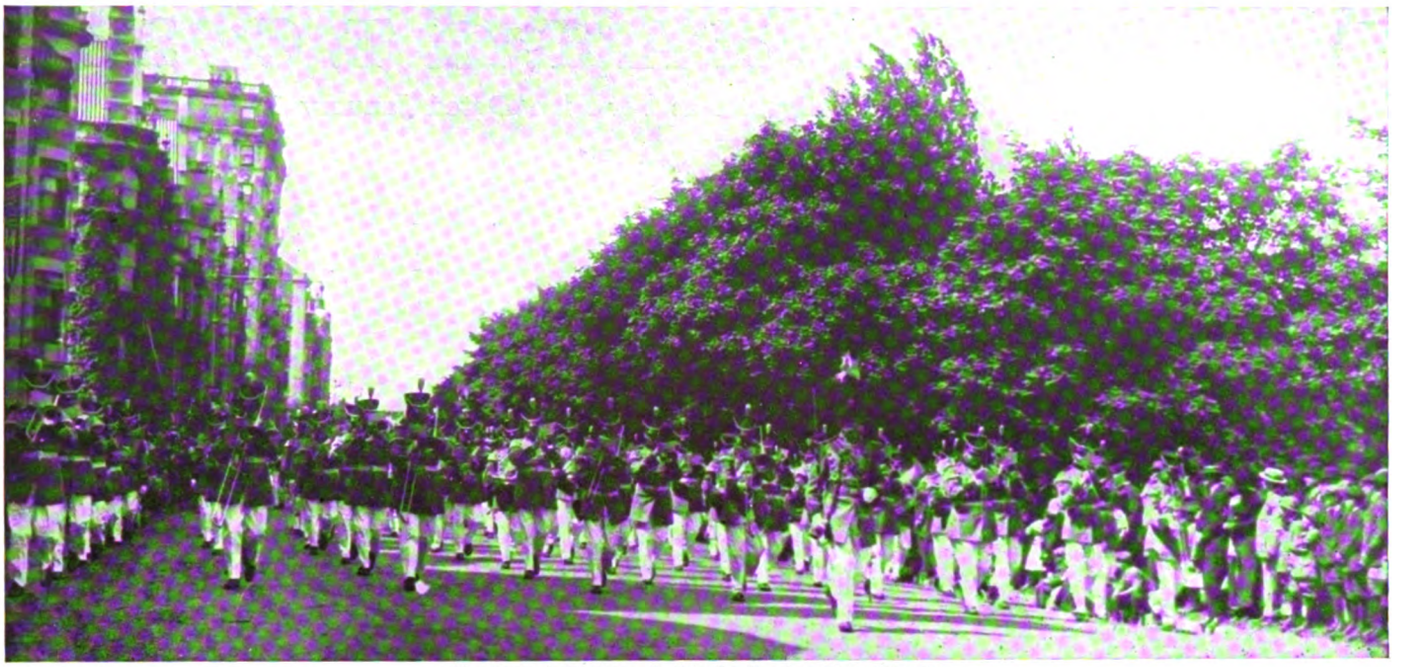

The Seventh Regiment Led by Its Band on Dress Parade

to such a pitch, their faces were so tense with the excitement that was consuming them, that it required no stretch of the imagination to believe the conditions would be no different if real lead were singing overhead.

Just back of the line, in the topmost branches of a great pine, an officer was seated, telephone receiver clamped to his ear. In his hands he held a pair of field glasses. He shouted something into the transmitter that was unintelligible to us above the din of rifle fire. Back over the hill the battery of field guns elevated their gray muzzles to the range indicated by the officer in the tree. There was a moment's pause, and then —bang!—the ground shook under the discharge.

The artillery was raking the left of the advancing line with its fire, yet not one of the guns peeped over the brow of the hill, not one of the gun crew had seen the enemy or what he was firing at; that part was left to the officer in the tree-top and his telephone.

The other telephone lines that formed the defensive position's system of communication were busy, too. Hurried messages were being shouted into transmitters at various points along the line. Some were directed to the ambulance corps. Other messages went up and over the hill to keep the officer in charge of the supply trains in touch with the demand for ammunition in the trenches below; others carried orders to different parts of the line, directing and controlling the fire of the men behind the guns.

Under the heavy fire from the trenches bodies of the attacking troops could now be seen in retreat in several places along the line, but the main body continued to advance. At two hundred yards there was a pause, and then with bayonets fixed and a wild yell they came on to the charge in one long line, pumping their guns as they came, and striving to obtain the superiority of fire that would put the defenders to rout. On they came shouting under the excitement of the charge. Fifty yards from the defenders in the trenches was an innocent looking fence, apparently the easily scaled rail fence with which every farmer surrounds his property. The attackers came up to it on the run, with the confidence that it offered no obstacle to their advance, but when they reached it they were confronted by a barbed wire entanglement that had been erected by the engineers just a few short hours before. It was the moment that the defenders had been waiting for, and volley after volley rang out from the trenches. The fire was so great that it seemed like the heavy and repeated crashes of artillery, and then, just when the wire cutters of the enemy had made openings in the entanglement in several places, just when the way seemed clear for the last desperate dash up the slope—"Bang!" All along the front great quantities of earth and stone were lifted high into the air and when the pall of heavy white smoke lifted the attackers could be seen in retreat down the hill.

The defenders had exploded their ground mines.

. . .

The battle of Martin's Mountain was over.

Five thousand troops, grimy, tired, and sore, were on their way back to camp. The hillside was deserted except for several detachments of Signal Corps men who were engaged at various points on the field in rewinding the telephone line that had been put to such good use during the day.

First on the field in the morning, last off the field at night, the telephone had truly performed for these men of war on the same plane of efficiency that it performs for men of business every day in the year. Then we thought of what an official of the Telephone Company said some time ago before a gathering of telephone men. In substance his statement was this:

> In the event of the invasion of this country by a foreign foe every one of the millions of telephones in the Bell System, every inch of its thousands of miles of wire, every man and woman engaged in maintaining and operating it, would become part of the nation's system of defense, working in the closest kind of coöperation with the army of defenders.

. . .

This ends Mr. Johnson's graphic story of an exciting day.

The one or two weeks a year which these militiamen put in on camp duty are not all the training they get, as everyone knows, but are intended merely to supplement the weekly drills in the armories.

The strategy and tactics employed deal with the same problems which exist in actual warfare, and quick thinking as well as quick action in the field are necessary to equip both officers and men in their respective duties.

The Telephone Company allows its employees who are members of the National Guard time off with full pay to attend the encampments, and recognizes the great obligation the country is under to these volunteers who are preparing themselves for the duty which would devolve upon every able-bodied man to answer the call to arms in time of need.

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Data on Purchase of A. T. & T. Co. Stock

By Employees of the Bell System as Per Plan Dated January 1, 1915

$110.00 Per Share

TERMS: Payments, $2.00 Per Month; Dividend, 8% Per Year; Interest, 4% Per Year

Designed and Prepared by P. A. Dunne, Traffic Department, New York Telephone Co., for "The Telephone Review"

				1 share	2 shares	3 shares	4 shares	5 shares	6 shares	7 shares	8 shares	9 shares	10 shares
Total Cash Paid	End of Quarter	1915	May 31....	$ 6.00	$ 12.00	$ 18.00	$ 24.00	$ 30.00	$ 36.00	$ 42.00	$ 48.00	$ 54.00	$ 60.00
			Aug. 31....	12.00	24.00	36.00	48.00	60.00	72.00	84.00	96.00	108.00	120.00
			Nov. 30....	18.00	36.00	54.00	72.00	90.00	108.00	126.00	144.00	162.00	180.00
		1916	Feb. 29....	24.00	48.00	72.00	96.00	120.00	144.00	168.00	192.00	216.00	240.00
			May 31....	30.00	60.00	90.00	120.00	150.00	180.00	210.00	240.00	270.00	300.00
			Aug. 31....	36.00	72.00	108.00	144.00	180.00	216.00	252.00	288.00	324.00	360.00
			Nov. 30....	42.00	84.00	126.00	168.00	210.00	252.00	294.00	336.00	378.00	420.00
		1917	Feb. 28....	48.00	96.00	144.00	192.00	240.00	288.00	336.00	384.00	432.00	480.00
			May 31....	54.00	108.00	162.00	216.00	270.00	324.00	378.00	432.00	486.00	540.00
			Aug. 31....	60.00	120.00	180.00	240.00	300.00	360.00	420.00	480.00	540.00	600.00
			Nov. 30....	66.00	132.00	198.00	264.00	330.00	396.00	462.00	528.00	594.00	660.00
		1918	Feb. 28....	72.00	144.00	216.00	288.00	360.00	432.00	504.00	576.00	648.00	720.00
			May 31....	78.00	156.00	234.00	312.00	390.00	468.00	546.00	624.00	702.00	780.00
			Aug. 31....	84.00	168.00	252.00	336.00	420.00	504.00	588.00	672.00	756.00	840.00
			Nov. 30....	88.30	176.59	264.89	353.16	441.47	529.74	618.04	706.35	794.65	882.92
Total Dividends Rec'd †	End of Quarter	1915	May 31....	$ 2.00	$ 4.00	$ 6.00	$ 8.00	$ 10.00	$ 12.00	$ 14.00	$ 16.00	$ 18.00	$ 20.00
			Aug. 31....	4.00	8.00	12.00	16.00	20.00	24.00	28.00	32.00	36.00	40.00
			Nov. 30....	6.00	12.00	18.00	24.00	30.00	36.00	42.00	48.00	54.00	60.00
		1916	Feb. 29....	8.00	16.00	24.00	32.00	40.00	48.00	56.00	64.00	72.00	80.00
			May 31....	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00
			Aug. 31....	12.00	24.00	36.00	48.00	60.00	72.00	84.00	96.00	108.00	120.00
			Nov. 30....	14.00	28.00	42.00	56.00	70.00	84.00	98.00	112.00	126.00	140.00
		1917	Feb. 28....	16.00	32.00	48.00	64.00	80.00	96.00	112.00	128.00	144.00	160.00
			May 31....	18.00	36.00	54.00	72.00	90.00	108.00	126.00	144.00	162.00	180.00
			Aug. 31....	20.00	40.00	60.00	80.00	100.00	120.00	140.00	160.00	180.00	200.00
			Nov. 30....	22.00	44.00	66.00	88.00	110.00	132.00	154.00	176.00	198.00	220.00
		1918	Feb. 28....	24.00	48.00	72.00	96.00	120.00	144.00	168.00	192.00	216.00	240.00
			May 31....	26.00	52.00	78.00	104.00	130.00	156.00	182.00	208.00	234.00	260.00
			Aug. 31....	28.00	56.00	84.00	112.00	140.00	168.00	196.00	224.00	252.00	280.00
			Nov. 30....	30.00	60.00	90.00	120.00	150.00	180.00	210.00	240.00	270.00	300.00
Total Interest Paid	End of Quarter	1915	May 31....	$ 1.06	$ 2.12	$ 3.18	$ 4.24	$ 5.30	$ 6.36	$ 7.42	$ 8.48	$ 9.54	$ 10.60
			Aug. 31....	2.05	4.10	6.15	8.20	10.25	12.30	14.35	16.41	18.46	20.51
			Nov. 30....	2.97	5.94	8.91	11.88	14.85	17.82	20.79	23.77	26.75	29.72
		1916	Feb. 29....	3.82	7.64	11.46	15.28	19.10	22.92	26.74	30.57	34.40	38.22
			May 31....	4.60	9.20	13.80	18.39	22.99	27.59	32.19	36.80	41.40	46.00
			Aug. 31....	5.31	10.61	15.92	21.21	26.52	31.83	37.13	42.45	47.75	53.06
			Nov. 30....	5.94	11.88	17.82	23.74	29.69	35.63	41.56	47.52	53.45	59.39
		1917	Feb. 28....	6.50	13.00	19.50	25.98	32.49	38.99	45.48	52.00	58.49	64.98
			May 31....	6.99	13.97	20.96	27.92	34.92	41.90	48.88	55.88	62.86	69.83
			Aug. 31....	7.40	14.79	22.19	29.56	36.97	44.36	51.75	59.16	66.55	73.93
			Nov. 30....	7.73	15.46	23.19	30.90	38.64	46.36	54.09	61.83	69.56	77.27
		1918	Feb. 28....	7.99	15.98	23.96	31.93	39.93	47.90	55.89	63.89	71.88	79.84
			May 31....	8.17	16.34	24.50	32.65	40.83	48.98	57.15	65.33	73.50	81.64
			Aug. 31....	8.27	16.54	24.81	33.06	41.34	49.59	57.86	66.14	74.42	82.66
			Nov. 30....	8.30	16.59	24.89	33.16	41.47	49.74	58.04	66.35	74.65	82.92
Total Equity	End of Quarter	1915	May 31....	$ 6.94	$ 13.88	$ 20.82	$ 27.76	$ 34.70	$ 41.64	$ 48.58	$ 55.52	$ 62.46	$ 69.40
			Aug. 31....	13.95	27.90	41.85	55.80	69.75	83.70	97.65	111.59	125.54	139.49
			Nov. 30....	21.03	42.06	63.09	84.12	105.15	126.18	147.21	168.23	189.25	210.28
		1916	Feb. 29....	28.18	56.36	84.54	112.72	140.90	169.08	197.26	225.43	253.60	281.78
			May 31....	35.40	70.80	106.20	141.61	177.01	212.41	247.81	283.20	318.60	354.00
			Aug. 31....	42.69	85.39	128.08	170.79	213.48	256.17	298.87	341.55	384.25	426.94
			Nov. 30....	50.06	100.12	150.18	200.26	250.31	300.37	350.44	400.48	450.55	500.61
		1917	Feb. 28....	57.50	115.00	172.50	230.02	287.51	345.01	402.52	460.00	517.51	575.02
			May 31....	65.01	130.03	195.04	260.08	325.08	390.10	455.12	520.12	585.14	650.17
			Aug. 31....	72.60	145.21	217.81	290.44	363.03	435.64	508.25	580.84	653.45	726.07
			Nov. 30....	80.27	160.54	240.81	321.10	401.36	481.64	561.91	642.17	722.44	802.73
		1918	Feb. 28....	88.01	176.02	264.04	352.07	440.07	528.10	616.11	704.11	792.12	880.16
			May 31....	95.83	191.66	287.50	383.35	479.17	575.02	670.85	766.67	862.50	958.36
			Aug. 31....	103.73	207.46	311.19	414.94	518.66	622.41	726.14	829.86	933.58	1037.34
			Nov. 30....	110.00	220.00	330.00	440.00	550.00	660.00	770.00	880.00	990.00	1100.00
Tot. Amt. to be Paid on Stock	End of Quarter	1915	May 31....	$ 103.06	$ 206.12	$ 309.18	$ 412.24	$ 515.30	$ 618.36	$ 721.42	$ 824.48	$ 927.54	$1030.60
			Aug. 31....	96.05	192.10	288.15	384.20	480.25	576.30	672.35	768.41	864.46	960.51
			Nov. 30....	88.97	177.94	266.91	355.88	444.85	533.82	622.79	711.77	800.75	889.72
		1916	Feb. 29....	81.82	163.64	245.46	327.28	409.10	490.92	572.74	654.57	736.40	818.22
			May 31....	74.60	149.20	223.80	298.39	372.99	447.59	522.19	596.80	671.40	746.00
			Aug. 31....	67.31	134.61	201.92	269.21	336.52	403.83	471.13	538.45	605.75	673.06
			Nov. 30....	59.94	119.88	179.82	239.74	299.69	359.63	419.56	479.52	539.45	599.39
		1917	Feb. 28....	*52.50	*105.00	*157.50	*209.98	*262.49	*314.99	*367.48	*420.00	*472.49	*524.98
			May 31....	44.99	89.97	134.96	179.92	224.92	269.90	314.88	359.88	404.86	449.83
			Aug. 31....	37.40	74.79	112.19	149.56	186.97	224.36	261.75	299.16	336.55	373.93
			Nov. 30....	29.73	59.46	89.19	118.90	148.64	178.36	208.09	237.83	267.56	297.27
		1918	Feb. 28....	21.99	43.98	65.96	87.93	109.93	131.90	153.89	175.89	197.88	219.84
			May 31....	14.17	28.34	42.50	56.65	70.83	84.98	99.15	113.33	127.50	141.64
			Aug. 31....	6.27	12.54	18.81	25.06	31.34	37.59	43.86	50.14	56.42	62.66
			Nov. 30....	-	-	-	-	-	-	-	-	-	-

*Balance due on stock March 1, 1917.
†These figures are based on 8% dividends being declared.
Note: These figures are based on the official rates of interest as charged by the A. T. & T. Co.

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The Special Use of Motor Trucks in Telephone Construction Work

By W. J. Sommers and W. M. Van Deusen

THE advent of the motor truck into telephone construction work occurred about ten years ago. The successful development of motor vehicles in this field resulted from combining the speed and power of automobile trucks with those features already proved desirable in the design and use of horse-drawn vehicles.

In addition to the transportation of material, tools, and men, the plant construction forces were interested in the special application of the truck power to construction work. With this in view, fertile brains soon evolved the trucks provided with winches driven by the power plant of the truck itself, with which the economical loading and unloading of cable reels and the pulling of underground and aerial cable were much facilitated. Previous to that time, hand operated derricks mounted on horse trucks had been used in pole construction with some success. These were the offspring of the simpler, well-known, "gin-pole" or sheer leg so generally used in the erection of heavy poles. In an effort to find some suitable method of applying the available engine power to pole work, derricks of various types were next designed and placed on winch trucks.

New York Telephone Company Truck No. 109. Note the Third Leg of Derrick Racked on Side

Required Characteristics

Experience with these equipments indicated the following features to be desirable in any such apparatus:

It should be easily transportable, flexible in its manipulation, and entirely under the control of one operator.

The derrick should be of such design that it could be quickly assembled, or taken apart, and worked over any desired point within a reasonable space about the rear of the truck.

The winch control should be such that loads could be lifted, held suspended or lowered as desired, and at variable speeds.

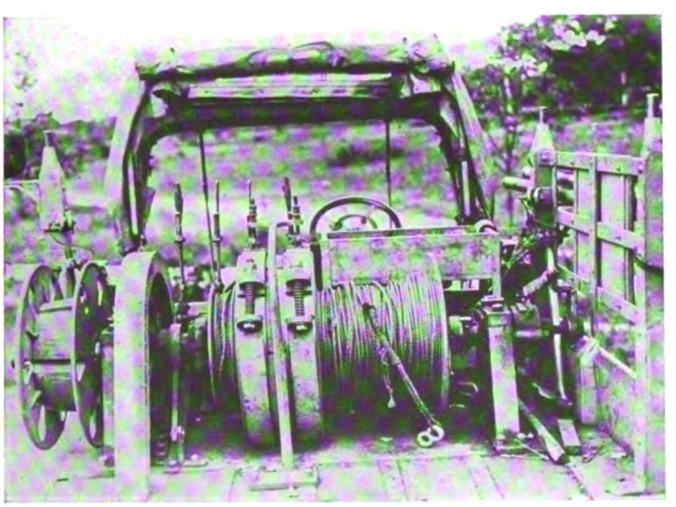
A close study of the entire proposition was made by those interested and during the past year two new motor trucks equipped with derricks and winches of special design were assigned to the Long Island Plant Department. These trucks are of five-ton capacity and have engines of thirty horse-power rating available for either propelling the truck or driving the winch. (See illustration No. 1.)

The Winch and Drums

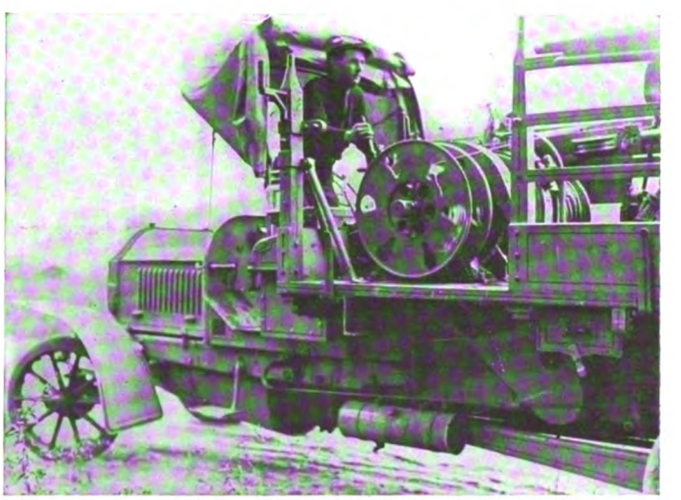
The winch shown in the second illustration is located in the forward end of the body, just at the rear of the driver's seat, and is supported by and braced to the chassis frame. The power drive for the winch is taken from an outside extension of a shaft in the regular truck transmission, through a special winch transmission, and thence to the winch drum shaft by a single chain drive. The special transmission has two change-speed gears forward and one reverse, which, used in connection with throttle control, provide for a large range of speed variation. Mounted on the winch drum shaft between the supporting frames, and free to revolve about it, are two drums equipped with cone friction clutches and contracting band type brakes. Clutches and brakes are controlled by the operator from his cab, as he faces the rear of the truck, by four hand levers, as shown in the third picture. These two drums are designed to carry, respectively, 2,000 feet and 150 feet of ⅜ inch plough steel wire rope. A third drum, keyed to this shaft and revolving with it, is located on the outside of the bearing supports and is fitted with a detachable outside flange which makes possible the removal in coils of rope or wire wound on this drum. (See illustrations Nos. 2, 3 and 4.)

Adaptation of the Truck Body to Construction Work

The design of the body itself presented some special problems. In order that



The Winch



Pulling Aerial Cable With the Third Drum of Winch. Note Position of Chauffeur When Operating Winch

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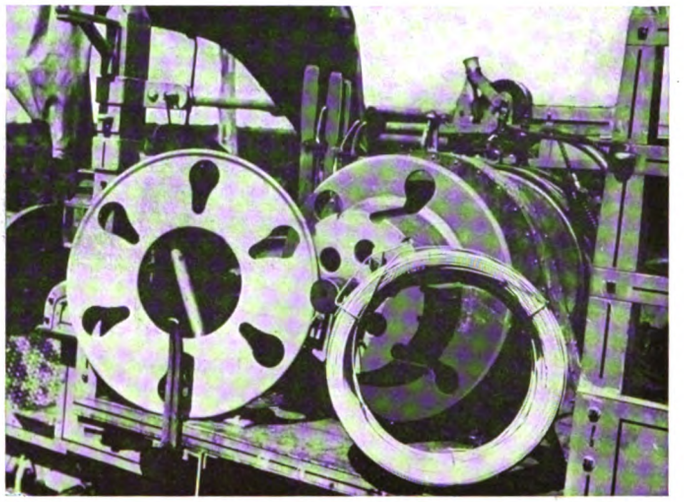
the bed of the truck might be kept clear for the operation of the derrick, suitable drawers and boxes were provided beneath the floor of the body to carry all tools and miscellaneous small material; a special compartment opening to the rear end of the truck carries the digging tools. Hooks outside of the body carry pikes, ladders, and the detached legs of the derrick, as shown in the first and fifth illustrations. On account of the abnormal weight to be carried on the sides of the truck, it was necessary to reinforce the side stakes with heavy knee irons. Especially reinforced side plates and corner posts were provided for guys from the mast of the derrick. To take up the vertical end thrust from the mast, the floor is strengthened with channels across the chassis at this point; its upper surface is protected against wear by metal strips extending the entire length of the body. A circular metal track on which the turntable of the derrick revolves is laid flush with these floor strips.



The Third Drum With Coil of Wire Just Removed After an Aerial Cable Placement

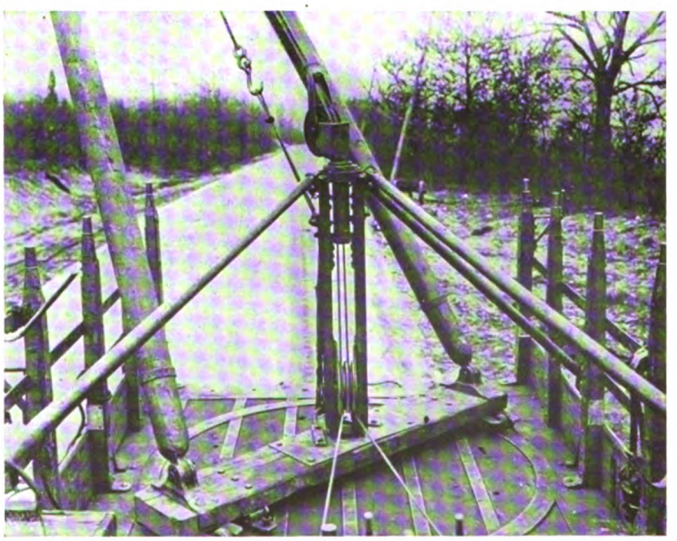
Rear View of Truck Ready for a Long Move. Note How Ladders, Pikes, Digging Tools, and Legs of Derrick are Carried. The Derrick Mast Is Not Removed Unless the Truck Is to Be Used for Handling Cable.

The Derrick

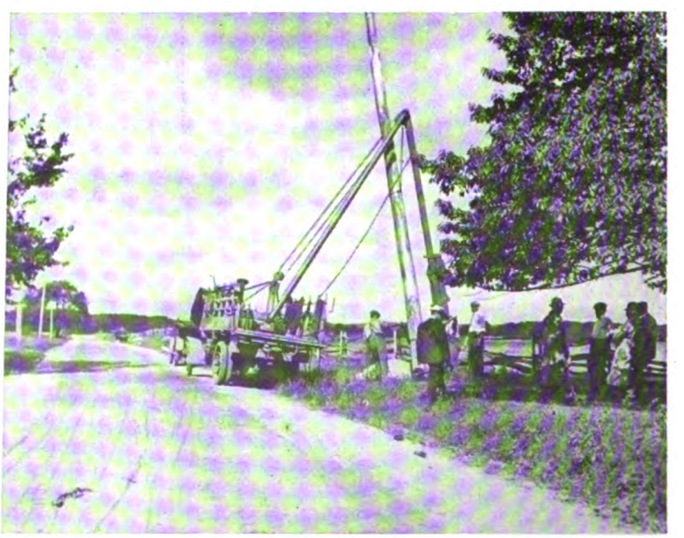
The derricks with which these trucks are equipped are of the tripod type, with two legs standing in the back of the truck and the third leg on the ground, when in use. The first two legs are secured at their lower ends to opposite sides of a turntable by pin bearings about which, as a center, they may be swung in a vertical plane; the upper ends of these legs and of the third leg are pinned together to form the tripod. The third leg is composed of two members, and is so constructed that its effective length may be varied from 19½ to 25½ feet by means of a special self-adjusting clutch. This is an important feature of the apparatus, as it permits the working of the top of the tripod at varying distances from the truck and from the ground.

The sixth illustration shows a mast about five feet in height, rigidly supported by means of two steel pipe guy rods or "stiff-legs" anchored to the reinforced corner stakes at the front end of the truck; these guys amply support the mast when the derrick is in position for working at the rear of the truck. At the sides of the truck, diametrically opposite each other and the mast, are two especially reinforced side plates, to either of which a third similar guy rod may be placed for taking up the lateral strain to which the mast is subjected when the derrick is in position for working off the side of the truck. The lower end of the mast passes through the center of the turntable and is seated in a special socket provided in the floor. The turntable is free to revolve about the mast as a center on rollers upon the circular metal track before mentioned. Two sheaves or wire rope wheels are placed side by side at the bottom of the mast with their axis in a fixed horizontal position at right angles to the length of the truck. Two more similar sheaves are fitted to a swivel

Truck Moving Into Position to Set a Pole



Mast and Turn-table of Derrick



Setting a Pole

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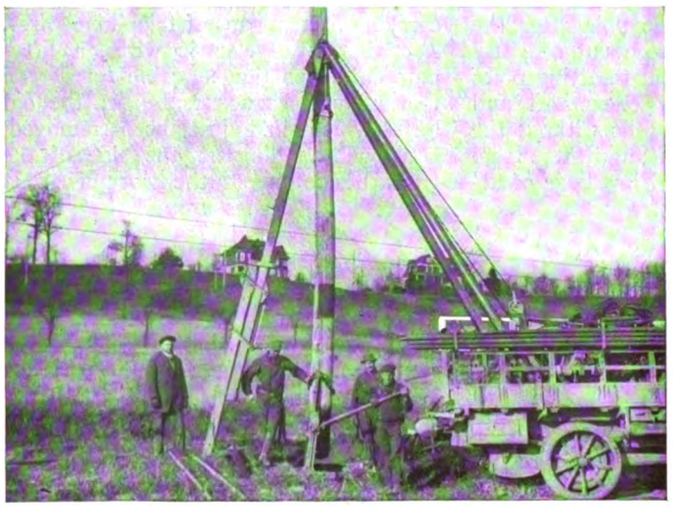
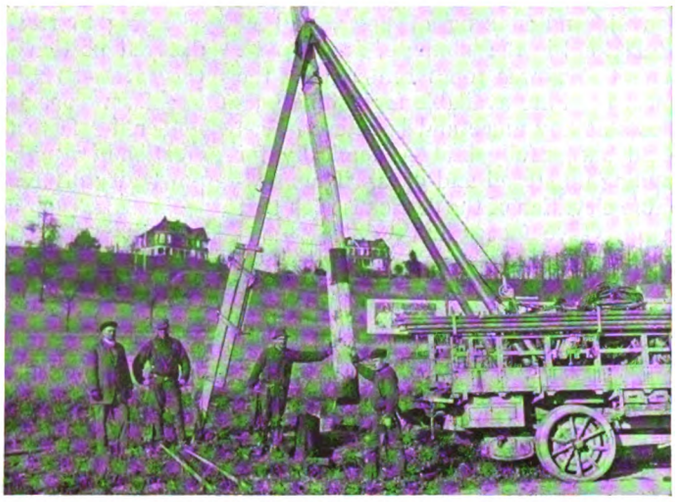


Resetting Work. The First Operation of Loosening the Pole in the Ground With Standard Pole Jack



Resetting Work. The Second Operation of Cutting Off the Pole Has Just Been Completed

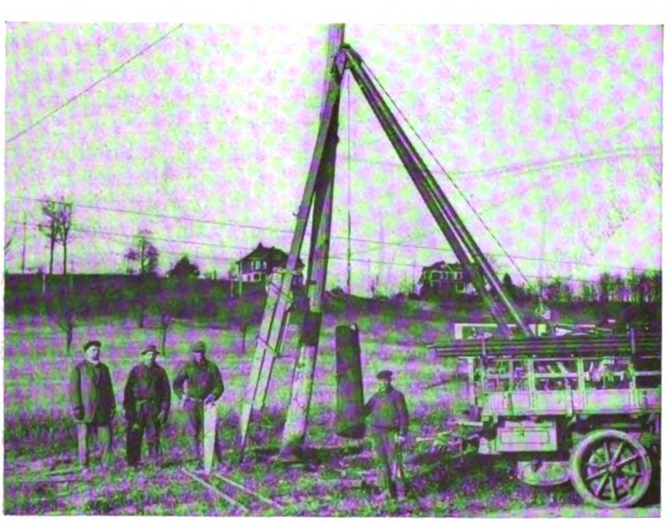
at the top of the mast to form what is known to the hoisting engineer as a "rooster." This is an appliance by means of which the drum ropes may be led in any direction from the top of the mast without altering the direction which they take over the two sheaves at the bottom of the mast. The ropes from the two clutch-controlled winch drums are led under the first two sheaves, up through the center of the mast, over the rooster, and thence over a third set of sheaves at the top of the tripod. Under ordinary working conditions, one of these ropes is then brought back and linked to the top of the mast, thus forming a "double whip" by means of which the top of the tripod may be raised or lowered by the winch mechanism. The second rope is drawn down and hooked to the clutch which controls the extension member of the third leg. With this rope, the operator of the truck can at will vary the length of the third leg within the limits above mentioned. After the derrick is set in position for work either rope may in a moment be detached for hoisting purposes. By means of the turntable, the derrick may be swung through a complete half-circle about the rear of the truck and when placed at a desirable working angle is secured in that position by means of pins through the turntable and the bed of the truck.

From his cab the chauffeur operates the derrick entirely unassisted by any other man upon the truck. He can place the tripod in position for work with its head at any distance from the truck from six inches to twelve feet. When moving from one job to another, the lower end of the third leg is swung back and rests upon the floor of the truck. With the brakes set, the two drum ropes serve as guys to hold the legs at a height suitable for passing below trolley wires, or other overhead obstructions; of course, this height can be varied at the will of the operator.

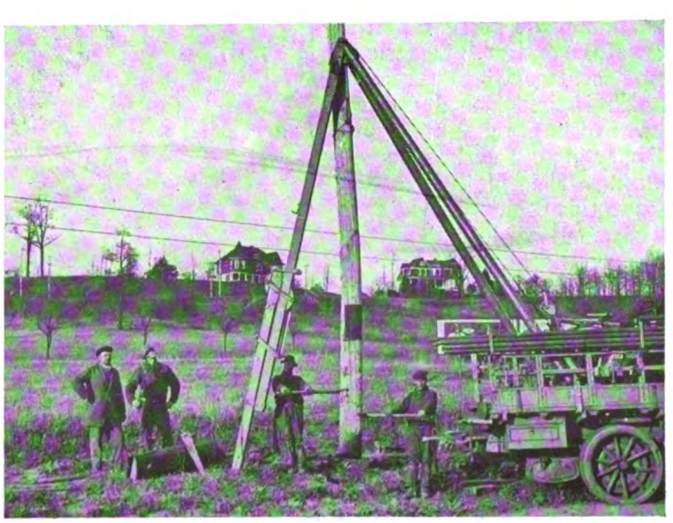
The derrick is collapsible; all the assembled parts are pinned together; the use of bolts and nuts is entirely avoided in the process of erecting or taking apart this apparatus. Where the size of the garage will not permit the entrance of the truck with the derrick in position, and on very long moves, it is dismantled and the three legs racked upon the hooks provided for this purpose at the sides of the truck. The entire time necessary for assembling or disassembling by two men and the chauffeur is less than five minutes.

Increased Efficiency of the New Trucks

The original application of power for pole work was in the erection of new pole lines. But the first derricks used for this purpose, whether operated by hand or by power winches, were heavy and somewhat cumbersome, and were properly considered as special apparatus whose use was not warranted for any but large construction jobs. The flexibility and ease of control of the new equipment just described has made possible its use for general all-around pole work. These trucks were assigned to regular gangs and have been in daily use during the past year. They have proved advantageous in the placing, replacing, resetting, re-



Resetting Work. The Third Operation of Pulling the Stump



Resetting Work. The Fourth and Final Operation of Lowering the Pole Into the Old Hole

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moval, and shifting of poles, and of special aid in the pulling of aerial cable. The two power ropes centered to the mast head are available for pulling purposes at any angle and have even been used successfully and economically for pulling up strand and guys. The maximum elevation of the derrick is such that a forty-five foot Class "A" pole may be erected or removed, the pole being supported in a balanced position. Fifty-foot poles are slightly top-heavy when thus handled. In lifting poles of greater length than fifty feet, guy lines from the top of the pole or snub ropes at the bottom are generally necessary.

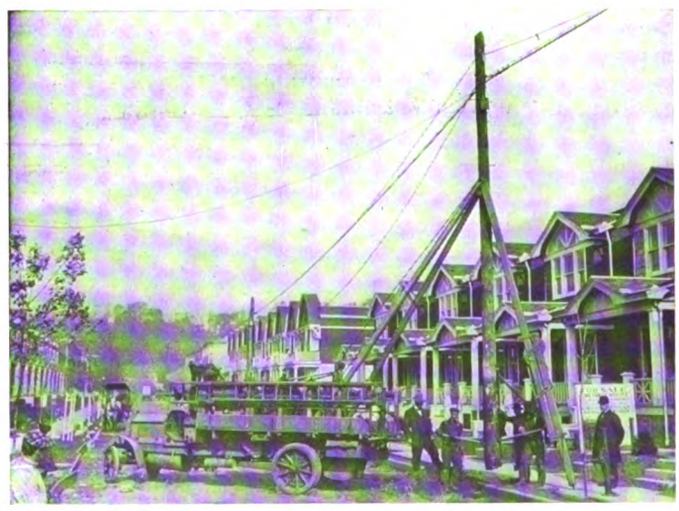
The seventh and eighth illustrations show the truck moving in position to erect a pole, and the pole being dropped in the hole. The chauffeur and two men are the only laborers needed for this work. Straightening, filling in, and tamping are done by other men following up the truck with pikes and other necessary tools.

Resetting a 70-ft. Underground and Aerial Terminal Pole. Note the Relative Size of Old Stump and Workman Standing at the Side of Trunk

In removal work the pole is first loosened in the ground by raising it from one to two feet by means of standard pole jacks, as described in the New York Telephone Company's Engineering Bulletin No. 46; when loosened the pole is removed and lowered to the street by the derrick. Thirty-five-foot Class "C" and smaller poles can usually be pulled out by the derrick alone without the use of pole jacks. Where traffic is congested, the pole is lowered directly onto a "dinkey" and wheeled off the street.

Resetting Poles

In resetting poles a marked departure from old methods has been made possible by the use of the derrick. One winch rope is attached to the pole, which is first jacked up and loosened in the ground as previously described in removal work. The ninth picture shows this position. The pole is next cut off just above the decayed portion and lowered until it stands upon the ground, as in the tenth picture. With the second winch rope the old butt is removed. The pole is then raised and lowered into the old hole, straightened up and tamped in, as in the twelfth picture. Since the diameter of a pole at its lower end is usually greater than at the ground line, the hole left by the removal of the old butt seldom requires enlarging to receive the pole after the decayed portion has been cut off. By this method the work of resetting poles has been considerably cheapened and rendered safe to the public without the erection of a "gin-pole"; and there is no possibility of accidental breakage of attachments, such as so frequently occurs when poles are reset without the use of a sheer leg. When resetting poles which do not exceed 45 feet in height, it is not necessary to use any rope guys; the first winch rope, which is left attached to the pole from the time it is cut off until it is reset, safely supports it from falling. This method has also made possible the resetting of a pole to any desired depth. Occasionally it is deemed more expedient to reset a pole 3 or 4 feet than to replace it. This places the old ground line, which may be only partially decayed, at a safe point 3 or 4 feet below the ground. Illustration No. 13 shows the resetting of a 70 foot pole carrying 5 crossarms of telephone wires, 2 crossarms of electric wires, a fifty-pair nineteen-gauge cable and an underground branch and box; the old butt, which had just been removed, is shown standing at one side of the truck beside one of the workmen. It measured 60 inches around the ground line and 78 inches around the butt.



Shifting a Pole Line Over a New Curb

Pole Replacement and Shifting

Pole replacement, when new holes must be dug, is handled in the same manner as erection and removal work. The replacing of a pole in its old location is handled somewhat differently. The old pole is cut off and the stump withdrawn just as in the first three operations for resetting work. The new pole is then hoisted and lowered in the same hole in which the old pole originally stood. If there are few attachments, they are immediately transferred to the new pole and the old pole removed. Where this transfer would consume any considerable amount of time, the old pole is lashed to the new pole, the truck moved on to a new job and the transfer taken up by a separate force of men.

This apparatus has proved especially valuable in shifting pole lines distances of from five to ten feet where highways have been widened or new curbs established. In this work the pole is loosened in the ground with jacks, then lifted from the old hole and lowered in the new hole, which has been prepared in the proper location, thus avoiding all trenching work. This can generally be accomplished without disturbing any of the attachments. The fourteenth picture shows the work of shifting a pole line, carrying aerial cable, from the outside to the inside of a new curb which had been built without preliminary notice having been served on the plant construction force. Ordinarily this job would have necessitated either erecting a sheer leg at each pole to be shifted, or rebuilding the line inside the new curb.

As already indicated, the derrick is so designed that it is possible to handle a 35 foot pole in a balanced condition 13 feet from the truck. This feature is of great advantage in doing work upon roads in outlying or newly developed sections, where it is frequently necessary to set poles beyond gutters

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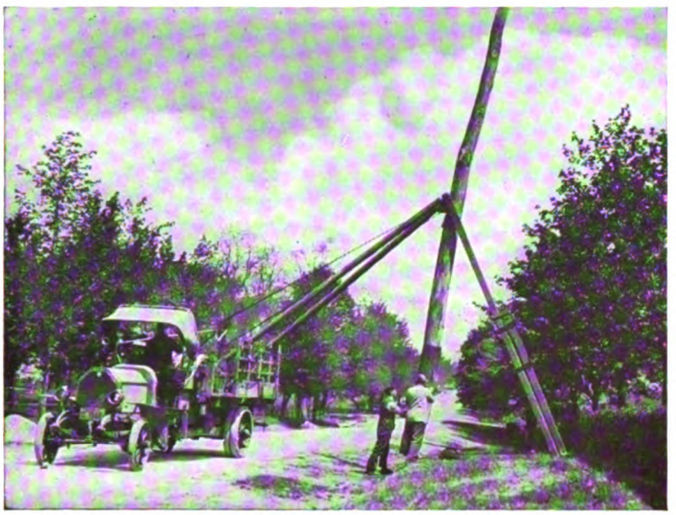
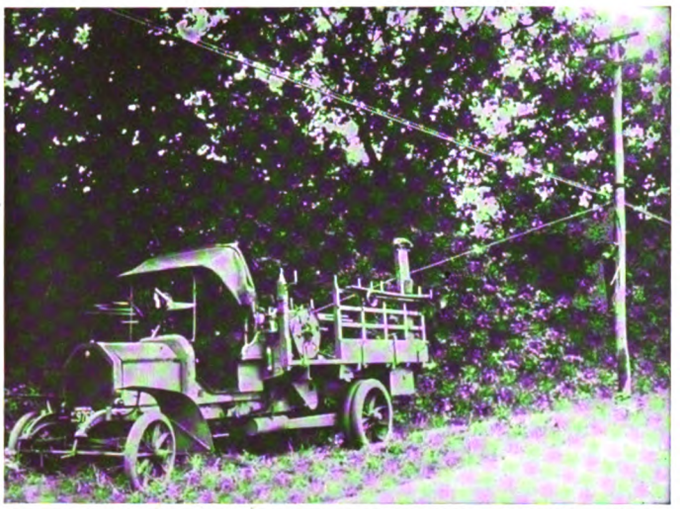


Setting a Pole 13 ft. from the Outside of Truck Wheels. The Center of Road is Good but there are 10 feet of Loose Sand at Sides Through Which No Motor Truck Could Travel



Pulling Aerial Cable With No. 10 B. W. G. Galvanized Iron Wire and the Third Winch Drum

or in fields 10 to 12 feet from the highway.

Pulling Aerial Cable

The collapsible third drum carried on the end of the winch shaft is used for coiling ropes or wire. It may also be used as a "nigger head." Its principal use, however, has been in connection with the endeavor to develop the pulling of aerial cable without the necessity of pulling a running line through the rings. The usual method of pulling aerial cable has been to place a "drag line" within the aerial rings when they are crimped upon the strand; by means of this drag line, for which marline or a light galvanized iron wire is generally used, a heavier rope, either a manilla "pulling line" or a wire rope off the winch drum, is pulled through the rings; it has been with this latter heavier rope that the cable itself is drawn into place.

Now, after considerable experimenting, it has been found practicable to crimp in the rings a No. 10 B. W. G. galvanized iron wire; one end of this wire is fastened to the cable to be pulled, the other end is fastened to this third drum of the winch. The cable is pulled into the rings by this drag wire alone, which is at the same time wound in a neat coil upon the collapsible drum. When the pull is finished, the coil of wire is quickly removed and placed upon the truck, leaving the drum ready for repeating the operation. This is illustrated in the sixteenth, third and fourth pictures. It is feasible thus to make straight pulls of 2,000 feet of 50 pair, 19 gauge cable or about 800 feet of 100 pair, 19 gauge cable. Short pulls of two or three sections of 200 or 300 pair, 19 gauge cable may be made in the same manner. Where there are corners to be pulled around, the length of cable which can be placed in this manner is somewhat reduced, depending upon the additional friction thus introduced. No. 10 B. W. G. iron wire breaks at a strain of approximately 750 pounds. This method obviates the necessity of running in an extra rope and later recoiling it. It is not necessary to dwell upon the advantage of having no ropes in streets where heavy traffic conditions exist. The wire is still perfectly suitable for rodding ducts and other miscellaneous uses.

While no accurate data on the savings effected through the use of these trucks is at this time available, nevertheless it is felt that they have proved to be an economical success. With the truck manned by a foreman, chauffeur and three linemen, as much pole work is accomplished from day to day as by the ordinary gang of a foreman and seven men equipped with a horse-drawn truck, while the actual physical labor performed by each man is decreased. The time consumed in moving from job to job is considerably lessened both through the greater speed with which the power truck can move and on account of the smaller number of men transported. On large construction or removal jobs, when moving time is not a feature, it is of course advisable to carry enough men to keep the truck and equipment working at full power throughout the day. But for general pole construction and maintenance work, the flexibility of ten men and two such outfits is as great as that of a force of twenty-four men equipped with horse trucks.

They have contributed materially to the ease and safety with which heavy pole construction work may be done in congested sections.

Historic Quarters

WE are indebted to Mr. J. C. Vail for the photograph from which the accompanying illustration was made. The building is in Beaufort, N. C., and much historic interest attaches to the old edifice as it was from here that Lafayette delivered an address to the citizens of Beaufort, in 1824. At the present time the top floor is used as a telephone exchange by the Southern Bell Telephone and Telegraph Company.

HISTORIC QUARTERS

Building in Beaufort, N. C., from which Lafayette made an address to the people on his visit to this country in 1824. The top floor is now occupied as a central office by the Southern Bell Telephone & Telegraph Co.—*Courtesy of Mr. J. C. Vail.*

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New York's Market Committee Meets By Transcontinental Telephone

THE Board of Estimate's Committee on Markets, which consists of the five borough presidents, met August 19 by transcontinental telephone. President Marcus M. Marks of the Borough of Manhattan, who is Chairman of the Committee, was in San Francisco leading a party of New York delegates to the Panama-Pacific Exposition in the observance of Manhattan Day. The other members of the Market Committee were in New York.

The American Telephone and Telegraph Company was giving a demonstration of its transcontinental telephone service, which President Marks and his Manhattan party were attending at the Exposition building, while other New York City officials and members of organizations represented in the Manhattan group on the coast, gathered in the telephone building at 15 Dey street.

MARKET COMMITTEE MEETING

Scene in New York at meeting of the Market Committee of the Board of Estimate, Greater New York, over which the Chairman, Borough President Marks, of Manhattan, presided by long distance telephone from San Francisco, 3,400 miles away—August 19, 1915.

When President Marks learned that the other borough executives were represented at the New York terminal of the Transcontinental line, he immediately instructed Acting President Ralph Folks to have Arthur Essing call a meeting of the Market Committee. Secretary Essing did as requested and while some thirty men and women of Manhattan listened, the Market Committee deliberated just as if the meeting was being held in the City Hall. President Marks said that he had given careful consideration to market conditions in various cities which he had visited, and was strengthened in his faith in open markets for the people as a proper and necessary opportunity. He declared that the municipality should offer space for such meeting places between consumers and producers.

When Chairman Marks from San Francisco put the motion approving the report which the Committee will send to the Board of Estimate, every person at the New York end of the long wire voted with the Market Committee. The motion was carried unanimously.

In charge of the New York end of the 3,400 mile talk party were J. R. Pollock, Division Commercial Manager of the New York Telephone Company, and J. W. Adams, Secretary of the Borough of Manhattan.

The San Francisco end of the demonstration was in charge of Mr. George W. Peck, the Exposition representative of the A. T. & T. Co., and among the participants in that city was Mr. James Robb, of New York, who had been appointed an official delegate representing the Borough of Manhattan.

After the Committee on Markets had completed its transcontinental deliberations, the New York and San Francisco representatives of various Manhattan associations talked with each other.

Among the speakers from New York were Wm. Post Sackett, J. M. Gidding, and David Cronbach, of the Fifth Avenue Association; Dr. George F. Kunz, President of the New York Academy of Science; William Fellowes Morgan, President of the Merchants' Association of New York; Frederic A. Lucas, American Museum of Natural History; Frank Kinderman, N. Y. Van Owners' Association; Charles W. Stoughton, President of Municipal Art Association; Jacob J. Tabolt, of the West Side Taxpayers' Association; Anna G. Cronin and Anna Tormey, of the Interborough Association of Women Teachers; Mrs. Eva Lovett Carson, of the Women's Press Club of New York; Holton H. Scott, National Electric Light Association; William McClellan, of the American Institute of Electrical Engineers, and Mrs. Augustus H. Levy, Woman's Health Protective Association.

The Manhattan Borough officials' party included the following in addition to those already mentioned:

E. P. Goodrich, Consulting Engineer, Borough of Manhattan; John H. Boschen, Assistant Commissioner of Public Works, Borough of Manhattan; E. W. Stern, Chief Engineer, Bureau of Highways; L. S. Burchard, Secretary to the Commissioner of Public Works; F. H. Hines, Supt. Public Buildings and Offices; Alfred Ludwig, Supt. Bureau of Buildings; and Robert B. Insley, Asst. Supt. Bureau of Buildings; Amos Schaffer, Consulting Engineer, Sewers; Chas. E. Gregory, Engineer in Charge of Sewers; Charles H. Levy, Engineer in Charge, Bureau of Designs and Surveys; Paul J. Marks, brother of Borough President Marcus M. Marks; Mr. and Mrs. Isaac Levy, brother-in-law and sister of President Marks; Miss Edith Levy, niece of President Marks. All of the foregoing talked with Borough President Marks in San Francisco. Mrs. J. W. Adams, wife of the Secretary of the Borough of Manhattan, talked with Miss Sue Chamberlain in San Francisco. Miss Chamberlain was a room-mate of Mrs. Adams at Wheaton College.

On a Party Line

On a Sunday afternoon an esteemed party named Smith casually remarked something about dinner, whereat his wife wearily sighed.

"John," said she, "I am too dead tired to cook to-night. Suppose we visit one of the neighbors and take a chance on being invited to stay for dinner."

"All right," was the ready rejoinder of willing father. "How about the Browns?"

"Not on your life!" quickly replied mother. "The Browns are going to have pork and cabbage. I heard Mrs. Brown order it over the party telephone. The Greens ordered chicken."
—*Philadelphia Telegraph.*

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New Midwood Central Office

By M. Greene, District Inspector, Brooklyn

AT 10 P.M., July 17, subscriber lines in the Midwood district, which had been working as a theoretical district from the Flatbush switchboard, were cut into the switchboard in the new Midwood building, No. 1421 Ocean avenue, Brooklyn. About 1,500 lines and 2,300 stations were involved.

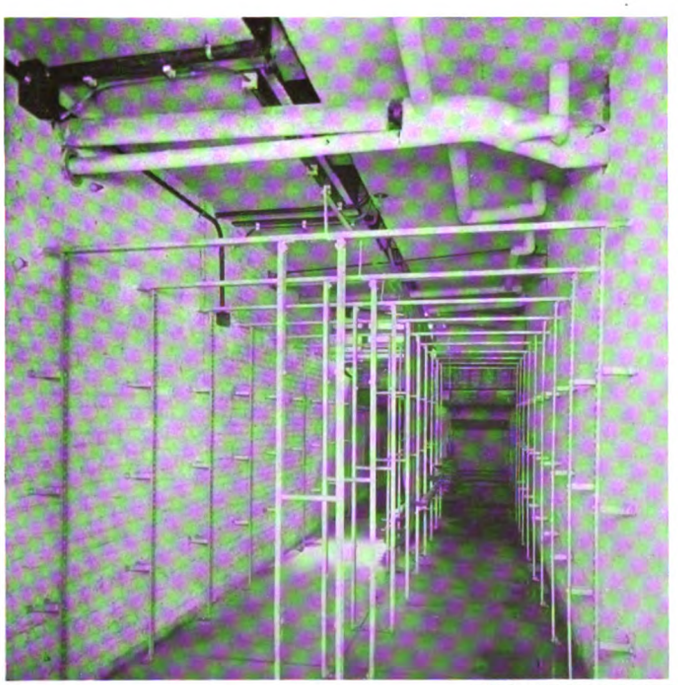
The building is located in a purely residential section and, with its white brick front and well-kept lawn, presents a very pleasing appearance, in perfect harmony with the surroundings.

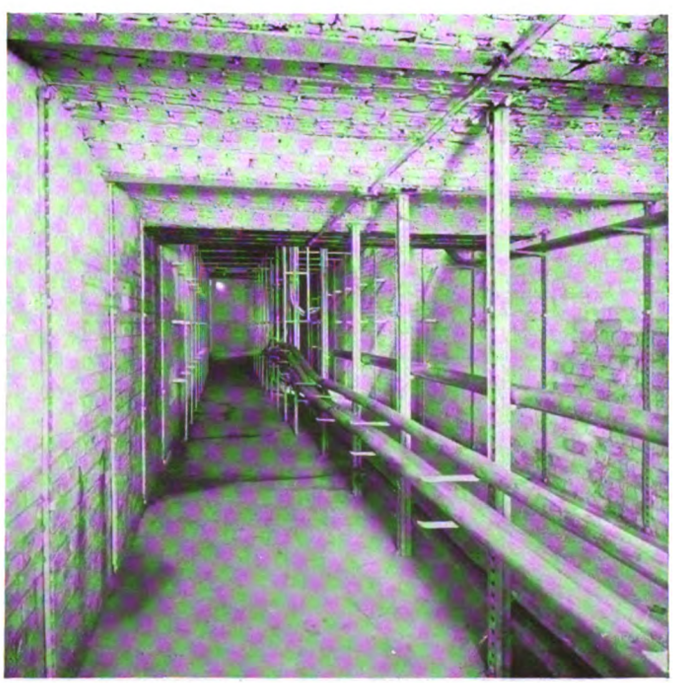
Midwood Central Office Building from Across Ocean Avenue

The switchboard, consisting of eleven "A" and seven "B" sections, is located on the second floor, practically all of which is used as an operating room. The indirect lighting here is particularly good, being effected by means of a skylight at the far end of the room, which throws the light against the white wall at the rear.

A feature of the new office was the installation of the first Wire Chief's desk of the new No. 12 A. T. & T. type. This desk was designed by the A. T. & T. Engineering Department, and modified as a result of conferences to meet, as nearly as possible, the requirements of all Bell licensee companies. The style of the desk is similar to that of the New York Telephone Company Type "B" desk, in that all equipment has been located within easy reach of the deskman. The testing instrument is a combination voltmeter and milliammeter with a single scale having three sets of calibrations. Testing voltages are 100 and 20, with resistances of 100,000 and 200,000 ohms, for the purpose of determining to a high degree of accuracy the measurement of insulation resistances. A set of three rheostats is provided on each position for regulating the operating current passing through relays under test. In this way relay adjustments can be made with the minimum specified operating current and more uniform results thereby obtained. Transfer test lines are provided, enabling installers and inspectors calling the Wire Chief for a test to be connected direct to a test cord by the operator. The desk has many possibilities in the way of flexibility and accurate testing, all of which were very ably explained by Mr. Kuhn, of the A. T. & T. Company, to the members of the Wire Chief's force before the cut-over. The set of pigeonholes mounted on top of the desk was designed by the Wire Chief to meet local conditions, and is not a part of the regular equipment.

The subscriber line and cut-off relays are of the 201-A and 202-A type, Midwood being the first office in the Long Island Division so equipped. For plugging up the cut-off relays prior to the cut-over, a trial was made of about 500 brass punchings designed by the A. T.





TWO VIEWS OF THE CABLE VAULT, MIDWOOD

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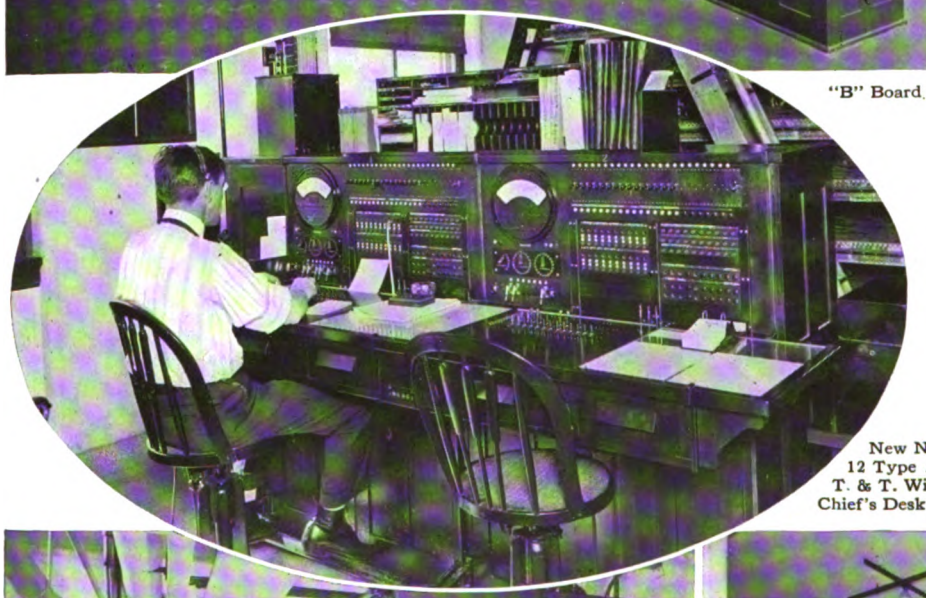
& T. Company for the purpose. For the rest of the equipment, clips made from Gem paper fasteners were used. Both types were tied in strings of ten, and the ends fastened to upright strips of wood between the relay bays. No difficulty was experienced in removing them at the time of the cut-over.

At 10 P.M. some twenty-odd connections which were up on Midwood lines in Flatbush, were duplicated in Midwood and the word given to proceed with the cut-over. At 10.01 all heat coils had been removed in Flatbush, and two seconds later all clips were removed from the Midwood cut-off relays. Only two "steady lights" appeared in the Midwood switchboard, both of which disappeared before the trouble could be located.

General View of the "Business End" of the New Midwood Operating Room

"B" Board.

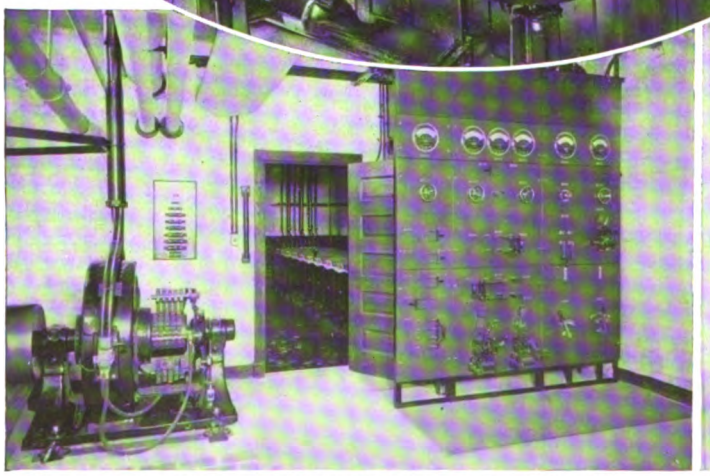


New No. 12 Type A. T. & T. Wire Chief's Desk

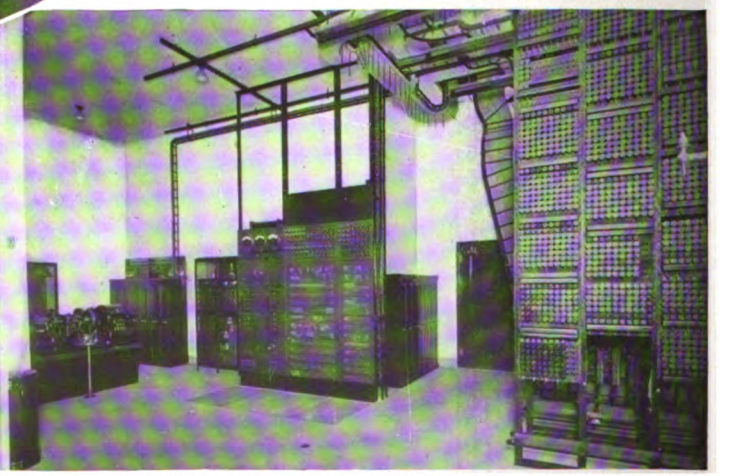
Owing to the fact that Midwood calls had previously been handled over the Flatbush switchboard, Flatbush and Midwood calling circuit buttons were strapped together in all offices having direct trunks to these exchanges. It was necessary that these straps be cut simultaneously in all offices and the new circuits connected through at exactly the same time the subscriber lines were changed over. The fact that this work was handled without error and without delay reflects great credit on the various wire chiefs involved.

The work of running cross-connections in the new office was handled, as usual, by the Construction Department under Foreman Rhinehardt, whose careful supervision and accurate records contributed largely to the success of the throw.

Wire Chief Pitcher and his force, whose work in connection with the new office started some three months before the cut-over, are to be congratulated upon the good results obtained. Recognition is also due Foreman Unger, of the Western Electric Company, for turning over a fine job.



Power Room in Basement of Midwood, Showing Battery Room Adjacent



Midwood Terminal Room, Showing Ringing Machine Equipment with Power Board

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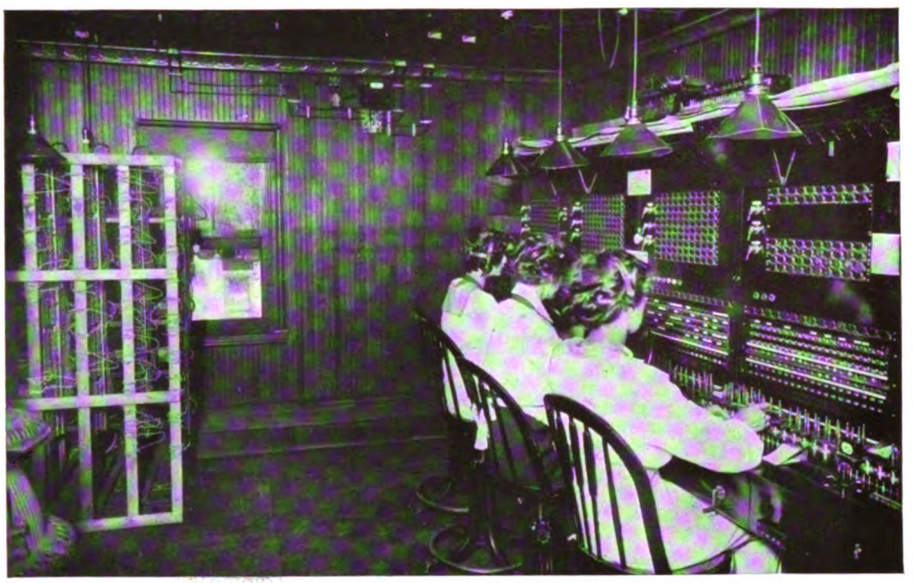
Port Washington Cut-over

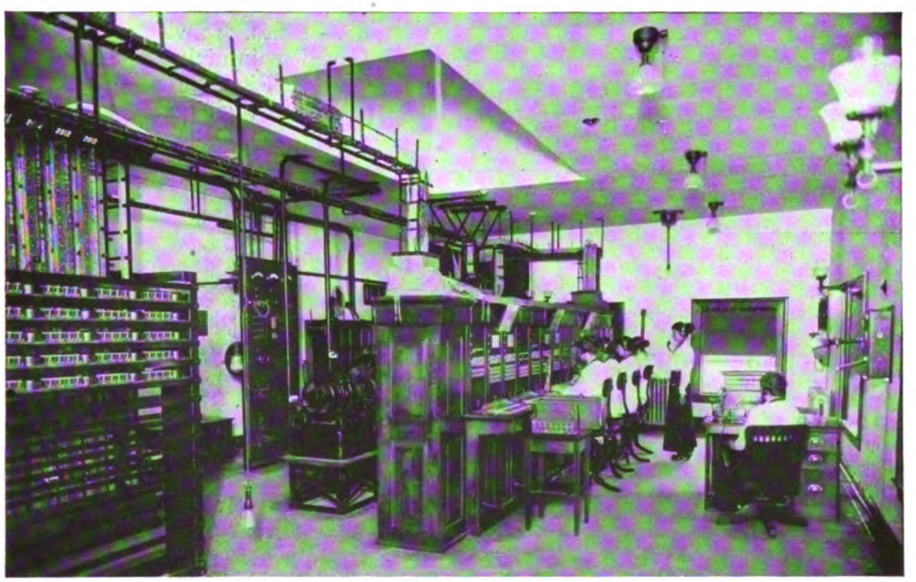
By H. C. Orth, District Traffic Manager, Suburban L. I.

A NEW No. 10 Western Electric common battery switchboard was cut into service at Port Washington on July 21, 1915, at 1.27 P.M. The initial installation consists of six switchboard positions with a subscriber type. In cutting over the direct lines there was not a single case of trouble.

The growth in lines at Port Washington during the various periods since the office was first opened in 1899 is as follows:



The Old Central Office, Port Washington. Opened in 1901.



The New Central Office, Port Washington, Cut into Service July 21, 1915

multiple of 500 lines. The floor plan arrangement provides a combination terminal and operating room and a suitable sitting room for the use of the operators.

One hundred eighty direct lines were cut-over on the date mentioned, it being necessary to cut-over the remaining 124 party lines one at a time, because of the fact that the ringing is of the selective

	Lines	Stations
1900	1	3
1901	5	9
1904	29	67
1907	81	152
1910	136	288
1913	217	404
7-21-1915	310	565

The central office was first located in Baylis's drug store, at the corner of Shore road and Main street, Port Washington, and was removed from there in 1901 to the location which was occupied at the time of the recent cut-over. The local office area served by Port Washington is 12.65 square miles. The population is 5,500. Included in the incorporated village is Sands Point, which is known as the "millionaire section" of the village, a number of very wealthy people having their beautiful homes there.

All Aboard

For the Pioneers' Convention at 'Frisco

PIONEERS and others who have in view a visit to the Panama-Pacific Exposition!

Do not forget the Pioneers' Special, which will leave the East on September 14.

The round trip is estimated at $227.38 from New York, $213.75 from Albany, and $201.05 from Buffalo. This includes railroad and Pullman transportation for the entire trip and all meals en route in dining cars (at Chicago, Kansas City, Colorado Springs and Salt Lake the meals are not included). Hotel accommodations at San Francisco and Los Angeles, and transfer to and from stations at stop-over points, are also included in the estimate.

You do not have to be a Pioneer to go along. For further information address Mr. R. H. Starrett, Secretary, No. 15 Dey street, New York.

Lost Fraternity Pin Found By Telephone

THE *Bronx Home News*, of which Mr. Joseph Ahearn is editor, tells of a precious bit of gold for which its owner now thanks the telephone. While dining at the Rye Beach Inn, a physician of the Bronx lost his fraternity pin. He did not miss it until he returned home, but then the telephone was called into action, the location of the table where the doctor had sat was described to the manager of the Inn, and the missing pin was found.

The Lure of the Mirage

A traveler, thinking to be facetious, told the darky ferryman that he had no money to pay his passage.

"But," said the colored man, "it don't cost only five cents to cross dis ferry."

"I haven't got any money at all."

Suddenly the darkey looked resigned.

"Don't you mind, boss," said he earnestly, "because a man dat ain't got five cents is jes' as well off on dis side of the river as on de odder." —*Exchange.*

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A Talk to Operators

By Mary J. Gannon, Manager of Schools, Western Division

IN every large business concern such as ours, and in fact in every business concern, success depends on the ability of those in charge constantly to increase the revenue and at the same time to keep down the operating expense. There are many ways in which you, as operators, can assist along these lines.

In the telephone business the only product we have to offer is service, and the success of our business depends almost entirely on the quality of the service which we give.

In the department stores, and in fact in practically all other lines of commercial activity, the salesmen have goods to offer, which to a large extent are well known to the public; for example, any article which has an established reputation all over the country is very easy for any salesman to sell, as the public when buying the article is willing to rely on the reputation of the manufacturers for the quality of the goods. Contrast this with the telephone business in which we have nothing to sell but service, or more properly "Bell Telephone Service." The Bell system has a reputation throughout the United States for supplying service of a very high grade. Many standards have been set by the Company, as the speed of answers, speed of disconnections, etc., and it is your duty as an operator to make sure that the service you are rendering is even better than the standards which have been set. Each operator is an important part of the great Bell system and it is the high grade work which has been done by each individual operator in the past which has given the Bell system its present reputation for supplying efficient service.

While your duties primarily consist of completing accurately and quickly all calls, the good will of the public which the Company now enjoys has not been obtained entirely through your efficiency, but through your courtesy as well. While it is often very difficult for you to reply in a courteous tone of voice when being criticized by a patron, especially in those cases when you feel that you do not deserve this criticism, at such times you should bear in mind that you are not being criticized in the personal sense, but as the direct representative of the Company. In cases of this nature a pleasant tone of voice and a courteous manner accomplish more in the way of satisfying the patron than you possibly realize. In our business a pleased customer is the best asset. Endeavor in all of the calls which you handle to leave the customer entirely satisfied, and if this is not possible report the case at once to your supervisor for further adjustment.

If your work involves the handling of toll calls, you are in a position to increase the revenue for the Company directly by patience in trying to complete all toll calls which are given you. On "particular person" toll calls, if it has been necessary for you to tie up a trunk of considerable value in order to obtain a report on a call, and if by locating the called party at another telephone or leaving word for him to call, you can complete the connection which might possibly be lost otherwise, you have obtained a certain amount of additional revenue for the Company and have left both the called and calling parties much better satisfied than if the connection were not completed.

If you are handling special work, such as information or multiple marking traffic, it is especially desirable to get all the information possible regarding people who are called but have no telephone connections, so that information may be passed to the Commercial Department which will assist them in their canvass for new business.

There are many small ways in which you can indirectly increase the revenue by cutting down expenses, as for instance, eliminating all unnecessary waste of pencils, stationery, etc., waste of supplies in the dining rooms, and the unnecessary burning of lights. If each operator will bear these thoughts in mind and will endeavor to be courteous, accurate, and alert at all times, she will have done her part toward maintaining the reputation which the Bell system has already established for a high quality of service.

The Value of Simplicity

AS an object lesson in the necessity of simplicity in business writing, we quote the following from an editorial in the *Evening Sun:*

The Stenographer Who Did Not Get the Job

We assure our readers, gentle and otherwise, that the subjoined letter, applying for a job as private secretary or stenographer to a railroad president, is genuine in every respect:

"DEAR SIR: I wish to lay before you my application for a secretarial position, to be given consideration at such time as you may require the services of one with the qualifications as touched upon in this letter.

"A competent and qualified stenographer, experienced in charting statistics, possessed of the taciturnity and discretion necessary to association with executives, broadly read on matters germane to railroad operation, a student of unity and clearness in composition, with an acquisition of that uncommon knowledge of English—including the study of word differentiations—essential to the highest grade stenographic work, an omnivorous though active reader with a vocabulary sufficiently large to meet the requirements of both your vocative and avocative correspondence, I am fitted to give such service as would be demanded by one in your capacity.

"I shall be glad to give to any designated subordinate an oral expatiation of my fitness and experience. "Respectfully yours,

"——— ———."

The railway president must have read this impressive document with awe and some apprehension. Here was a vocabulary so large that it would undoubtedly have to be checked whenever the gentleman in the secretarial position traveled by rail; and this, under the Cummins amendment, might be no trifling matter of expense. Perhaps that is why the student of unity and clearness, although equipped with the taciturnity and discretion necessary to association with executives, was not invited to meet the requirements of this particular executive's vocative and avocative correspondence.

Nothing we know of so vividly emphasizes the truth that in business writing words should be simple and direct. As Mr. Scarburgh, Advertising Manager of our Company, has often said, words should be so simple that the idea will stand out clearly and one will not remember the words but will carry away the impression or picture of the idea itself. As an illustration, Mr. Scarburgh takes the show case and points out how the simple, clear, transparent glass—certainly not a thing of beauty itself—serves to display the wares inside; and how this show case might be fitted with Tiffany glass and ornamentation so that it would be a work of art, but that then it would not accomplish its purpose. Attention would be attracted to the show case itself and away from the goods to be displayed.

The tale of Dr. Johnson and Oliver Goldsmith is a good text for business writing. After listening to an "oral expatiation" by the great dictionary-maker, Goldsmith remarked, "Doctor, if you were telling a story about little minnows you'd make them talk like whales."

Beware of the whale in business correspondence!

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LAMPS AND KEYS

By Dorothy Thorne

Courage Victorious

WHILE the great ship was still in midstream, triumphant fragments of the music from her band came to us; tossed and torn in shreds by the wind they were, but triumphant still.

Her propeller was only half submerged; two blades were out of water all the time. There was something almost pitiful in those blades, working fruitlessly through half of every revolution. So much real effort; so much wasted power. And yet it was eloquent of the pluck, the spirit of "every little helps" which seemed to actuate them. For they were pushing the ship along, in spite of their handicap, and they had brought her safe across the great ocean.

The huge white letters along the vessel's side told us she was the *Ryndam* from Rotterdam, and we knew she had a precious cargo of little Belgian children, being brought to America to new homes and a new future to replace the homes and the future that had been devastated by the war. So we pressed hard against the railing to catch the first glimpse of these little future citizens of our country.

There were about a hundred stalwart, rosy-faced little boys and girls of every age—tiny, calm-eyed, little urchins in heavy, dark wool dresses. Wee persons with frocks too large, but with wide eyes and stolid expressions, bright hair, and the firm rosiness of open fields and country sunshine on their faces. We knew at the sight of them that America was fortunate in their coming. How would they take the new life?

And then the answer came. All at once the whole band was singing. Children of all sizes, the few mothers that there were—these Flemish refugees who had seen and known sorrows we shrink from reading of—were singing victoriously. Their voices rang with the fervor of their spirit; every ounce of lung-power seemed to swell the volume of that triumphant strain. And all the while the ship was making fast and baggage and cabin passengers coming ashore, they were singing, over and over, the national air of Belgium.

. . . . . .

The victorious shreds of music above the wind, the plucky little propeller spending half its power fighting circumstances, with only half remaining to speed the ship—they had told the story well. Triumphant courage—it was the same story, at heart, as that of the stenographer keeping her head and using it no matter what happens, and of the operator victorious over flood and fire and storm. A hundred refugees from war-stricken Flanders—the little ones so round and rosy you would have loved them, girls—singing victoriously. It was a sight to give us all a new and stronger fund of courage.

Vacation Reflections

FOR most of us vacations are over until next summer. Over, that is, except in memory, but the memory is a very substantial shadow of the vacation, and the whole round year will reflect, when we will, the things we liked best in our vacations. Whether it was dancing to our hearts' content, with the luxury of sleeping late the next morning, or of being up early for a muscle-making, sunburning morning of swimming and boating and a picnic, or whether it was paddling silently on shadowy waters where the cool trees met overhead, and only soft woodsy sounds told of the forest life, it sent us back with a new grip on our everyday life. New friends made, new scenes become familiar, new fun enjoyed, open up new pathways and new outlooks.

Vacation Reflections

Face the Sun

Miss M. O'Connor, supervisor, of the Orange office, wants us all to enjoy this good, practical philosophy:

DON'T hunt for trouble, but look for success. You'll find what you look for, don't look for distress.

If you see but your shadow, remember, I pray,
The sun is still shining, but you're in the way.

Don't grumble, don't bluster, don't dream and don't shirk;
Don't think of your worries, but think of your work.
The worries will vanish; the work will be done.
No man sees his shadow who faces the sun.

Boston Post.

Miss Britt, of Nyack, Shows What a Girl With a Telephone Can Do

WHEN a girl uses her head and takes a stride forward, when she enlarges her own abilities and at the same time, directly or indirectly, the business of the Company; when she rises to a situation demanding more than anything that she has met before has demanded, then she is the very girl the rest of us want to know about. For some of us just naturally *are* pioneers, and some of us would be if we knew how to go at it. And all of us know that the fun of accomplishing is contagious. We want to know those girls who have accomplished more than usual. We are getting things done, too, and we'd like to talk it over and exchange experiences. Right here on this page we can be introduced and have a quiet chat or a rollicking good time, as the mood suits us. The territory is too wide and there are too many of us to get all together in person, but here we certainly can put our heads together, figuratively speaking, and gain each other's enthusiasms and ideas. So don't be over-modest, but write to Lamps and Keys when you have been doing something unusually hard or unusually interesting, and tell us all about it. And if you know some girl in the Company who has done something special, introduce her to the rest of us. We all want to know her.

A clew in the story, "Rockland Won," which appeared in the May-June issue, was followed out, and it brought to light Miss Mary Britt, of the Nyack commercial office.

Miss Britt had some spare time now and then. Her office was trying to excel in the record of extension station gains. She could help. She hadn't canvassed by telephone before, but she knew she could do it, so at a word from her superior she started a "telephone selling campaign" for extension stations.

"I've never done anything I was so interested in, in my life," Miss Britt said the other day, and the enthusiasm with which she recounted her experiences seconded her words.

Miss Britt knew more or less about most of the people in Nyack whom she canvassed, so she adapted her arguments to their interests, showing how the telephone extension would help to meet their needs. When she was dealing with residents of the towns outside of Nyack, about whom

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she knew nothing, there was where the fun came in! Then she had to be on the *qui vive* to find the things that would interest them. In every case she had to watch how they received her opening points and then develop the sides they showed interest in. She was keenly alive to every shade of meaning or unconscious suggestion in the replies or the attitude of the person she was interviewing—ah! it was a game to play! Talk about fishing! Handling a big fish, with lots of battle in him, is idling the hours away compared with handling a real prospect. Miss Britt won twelve new extensions; then she canvassed for directory advertising.

The methods here were similar, and Miss Britt cracked some hard nuts before she finished her campaign. One advertiser in particular Miss Britt takes particular pride in having won for the directory, for he was a business man who had been approached from many angles before, and had withstood all the allurements of this form of advertising. Miss Britt convinced him, that was all, and he took half a page in the directory.

She loved the work she was doing. Perhaps that as much as anything accounts for Miss Britt's success. When canvassing for extension stations she often found that Mrs. Prospect would have to leave it to her husband, who wouldn't be home until seven. Seven was after five, but little did that matter to Miss Britt. She called Mr. Prospect in the evening. What with her interest in the campaign and her love of the work it involved, it's no wonder Miss Britt showed so well what a girl can do when she takes down the receiver.

The Right Word at the Right Time

THE irregularities which come up all the time put spice into the jobs we are doing, especially in the matter of handling the public. "The Woman Who Saw" in the *Evening Sun* tells of a bit of diplomacy which we who deal with the public, whether from central or commercial offices, will not be slow to appreciate.

At the ticket window of a transportation company two people tried to buy tickets at the same time, having approached from opposite sides. The coins collided and one fell to the floor of the ticket seller's booth. Only one ticket was given out, and the girl who had parted with her money for no return waited for her ticket without result. Finally she stormed up to the gateman, demanding the number of the man at the window.

It was a situation which needed to be saved. Puff! came the wind out of the sails of the excited girl as the gateman said slowly:

"G'wan through."

"But what about the lost nickel?" She gazed at him with a bewildering, beguiling smile.

"Well, if he don't find it," said the ticket taker consolingly, "I'll rob the baby's bank. Go on through."

. . . . . .

Though an entirely similar situation would never be met in our experience, the essence of it is familiar—"The Public"—needing just the right treatment at the right time.

Many of you girls know of cases handled with as much diplomacy and success as this. Tell us about it!

Who Does as Much?

EVEN the usually up-to-the-minute newspaper writers are still behind the telephone times, we see by the out-of-date name applied to the operator in the following clipping from the *Globe*. He might have made it "three thousand miles away," also, instead of "a thousand." In other respects we can all heartily echo and reëcho the wisdom of the writer.

THE HELLO GIRL

By Walt Mason

(Copyright, 1915, by Adams Newspaper Service)

We hear her silver voice and mutter, "That damsel surely is a peach! She helps us earn our bread and butter and brings all things within our reach. Intelligent and prompt, she labors, we hear her voice by night and day, she makes us seem like next-door neighbors to folks a thousand miles away. She is the modern maid of magic, the priestess of a mystic fire, and tidings glad and tidings tragic she sends us daily o'er her wire. If she dropped out the world, confounded, would stagger back and groan and yelp, and Trade, by all its loot surrounded, would raise a frenzied cry for help. If she no longer drew her wages confusion would supremely reign, and back into the pitch-dark ages we'd swear we had been dumped again. She's boosting science, art, and learning; she is the prop of modern trade; she keeps the old world's wheels a-turning, so we should bless the hello maid!"

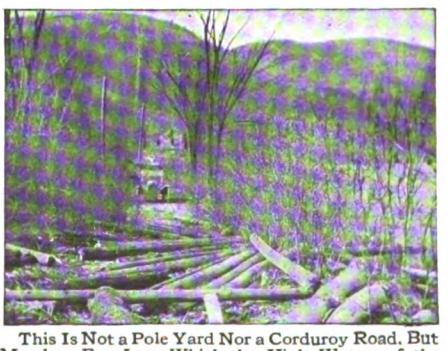
When You Write to Lamps and Keys

ALL letters, pictures, criticisms, suggestions, and all the helpful thoughts you have for Lamps and Keys, should be addressed to Miss Dorothy Thorne, The Telephone Review, No. 15 Dey street.

Real Weather in the Adirondacks

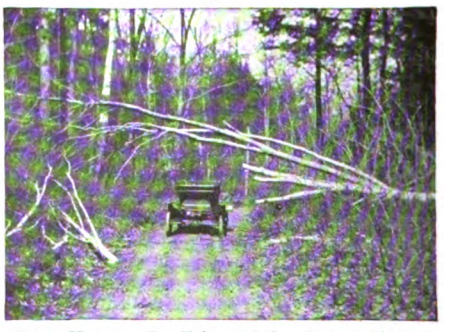
FOR these pictures we are indebted to Mr. C. H. Teegarden, district plant superintendent, Schenectady, who has reason to know what such weather means to the telephone plant. Mr. Teegarden suggests that the views "may interest some of the Review readers who are accustomed to less rugged country," and we agree, especially for the city-dwellers. The results shown here of heavy rains and high winds offer an unexpectedness and diversity which are bound to be interesting and must keep the telephone men in that part of the country "on the jump."

The photographs give us a glimpse of the fascinations of the Adirondack country, too, for the mountain spring water, the wood-covered hills, and the bracing mountain air, which can almost be felt in the pictures, offer a tempting invitation to come and discover the charms of the wood roads.



This Is Not a Pole Yard Nor a Corduroy Road. But Merely a Few Logs Which the High Waters of the Upper Hudson Have Placed in the Highway. Only an Incident in Getting Around.

Stopping by the Wayside for Some Real Adirondack Spring Water That Is Too Good to Be Bottled



Trees Have to Be Trimmed for Automobiles as Well as for Wires. A Ford Car and a Little Hudson Division Ingenuity Will Take a Troubleman Through Anything.

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Here and There

The Price of Knowledge

"PEOPLE who point out our faults or errors do us a lasting service. Better kindly done, but even if unkindly it is better than not having it done at all. Unfortunately, many people wax angry or resentful when they are corrected. But that is really through wounded vanity. After all, we want the truth. We learn more and more, and every day. Personally, I am glad to be shown and to learn. If I am wrong about anything, I don't care what it is, I want to be set right. I've no desire to harbor error, and he who can set us right has done us a favor, has added to our mental value and equipment. Nothing is beautiful but the truth, and we want the truth, and the truth *only*."

This advice has helped me wonderfully in the "business world," and especially in this "telephone world of ours." Perhaps some of my Blue Bell friends may derive some benefit from it, too.

(MISS) H. M. LYONS,
Evening Chief Operator, Waverly.

We are sure there will be others who will find it helpful. Too often people feel that unfavorable criticism is not welcome. As a matter of fact, that is the kind that should be most welcome. It is the kind that does the most good, and if it is given sincerely—and it should never be given otherwise—it is the most helpful thing in our experience. A newspaper friend has sent us a placard like one he has framed in his office, reading:

DAMN THE COMPLIMENTS—
BLESS THE CRITICISMS—
THEY MAKE A NEWSPAPER.

Courtesy on Country Party Lines

A GOOD story, full of humor as well as of suggestion, has come down from Mr. E. N. Bull, Local Manager at Poughkeepsie. It is about a party line. Don't laugh yet; you don't know this one. There are so many good stories about party lines that a collection of them would afford infinite amusement, and the Editor would be glad to make such a collection and print the best of them if they are sent in and are all "real," as this one is.

"Party line interference" is sometimes the cause of complaints from our rural subscribers. It is a condition which can be remedied best by educational means, and for this purpose, whenever such a complaint is received the little pamphlet "Courtesy on Country Party Lines" is sent to all the subscribers on the particular line affected. Recently a subscriber who had received one of these pamphlets wrote the following letter to the Company's Poughkeepsie office:

DEAR SIRS:—This letter was received last night and I am sending it back to you as some Body may need it more than I do, on the —— 000-0 lines. According to the Initials on the envelope I have reason to suspect that Mr. R—— F. D—— of the 000 line Sent it if you wish you can send it back to him at any rate I know it all by heart now so I don't need it any longer. Sincerely yours, (Signature.)

The envelope mentioned in the letter was returned with the pamphlet and Mr. Bull was able to discover how the subscriber found initials on it which gave him "reason to suspect" who sent it to him, for in the lower left hand corner was written "R. F. D. 18," referring, of course, to the Rural Free Delivery route, and not to "Mr. R—— F. D—— of the 000 line." In order to relieve the "suspect" of the unjust imputation and to prevent a rupture of good feeling between neighbors, an explanation was promptly made.

The incident shows the value of such pamphlets, and if one man knows this one "all by heart now," others may profit by his example.

Musical "Bell" Float

THE Glen Telephone Company entered a float in the celebration given at Gloversville, N. Y., upon the twenty-fifth anniversary of the signing of the City Charter. Silver paper covered the booth and the driver's hat and coat were silvered.

Musical bells were mounted on the various telephones on the float and a man stationed in the booth "rung them up" to the tune of "Home, Sweet Home," thus emphasizing the truth of the legend on the sign, "What Is Home Without a Telephone?"

Float of the Glen Telephone Co. in Industrial Parade

Testified by Telephone

ONE of the most unusual methods of taking testimony in the history of court practice was resorted to in a circuit court the other day. A certain man was needed as a witness in a damage suit, but he was unable to be present in court as he was a patient in the contagious disease hospital, having been stricken with smallpox. The telephone solved the difficulty and the witness testified over the wire. One attorney for each side and a court stenographer heard the testimony through separate receivers.

Erratum

THE article entitled "Poundin' Pavements," which appeared on page 239 of THE TELEPHONE REVIEW for August, was mistakenly attributed to S. Crowell, Dey Street Commercial. As a matter of fact Mr. Crowell, the rightful author of that spicy story, is still doing business at the old stand, New Brunswick Commercial. Dey Street Commercial will have to produce a snappy writer of their own if they want to continue enjoying the fine reputation mistakenly thrust their way last month.

Feeding by Telephone

Not a Joke, But a Blessing

IN the splendid work being done by the milk stations of our cities, the telephone plays its part as life-saver and health-builder. When the weather is cruelly warm and humid, when tens and hundreds of babies are suffering from lack of proper care, such a simple thing as a telephone call holds the chance they have to grow up and be—perhaps good telephone employees themselves. We do our work so casually we rarely stop to think what one little act of ours in completing a call or clearing a wire of trouble means to someone.

The Troy, N. Y., *Northern Budget* tells of the work the telephone is doing in connection with the Babies' Milk Station. How many lives are saved in similar stations all over the territory would be hard to tell, for by means of the telephone word may be sent to the station as to the baby's condition, and advice may be given regarding the kind of care and food he should have. In Troy "one member of the Babies' Milk Station family lives so far away that he comes to the station for the weekly weighing only, but every day the mother telephones for instructions regarding the preparation of his food."

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"Batter Up" by Telephone

BASEBALL by telephone has beaten its own record. We've heard of disabled players who followed each play in the closing games of the World's Series by telephone, when they were unable to be at the field even to see the glorious finish. But now comes the report from San Francisco of the actual moves in more than one big game being conducted by telephone from the bedside of the temporarily knocked-out manager.

The *Evening Sun* describes it thus:

Something new in baseball has been inaugurated by Harry Wolverton, manager of the San Francisco club, of the Pacific Coast League. The former leader of the New York Yankees has conducted the field baseball campaign of the Seals from his bed by the aid of telephone and telegraph wires.

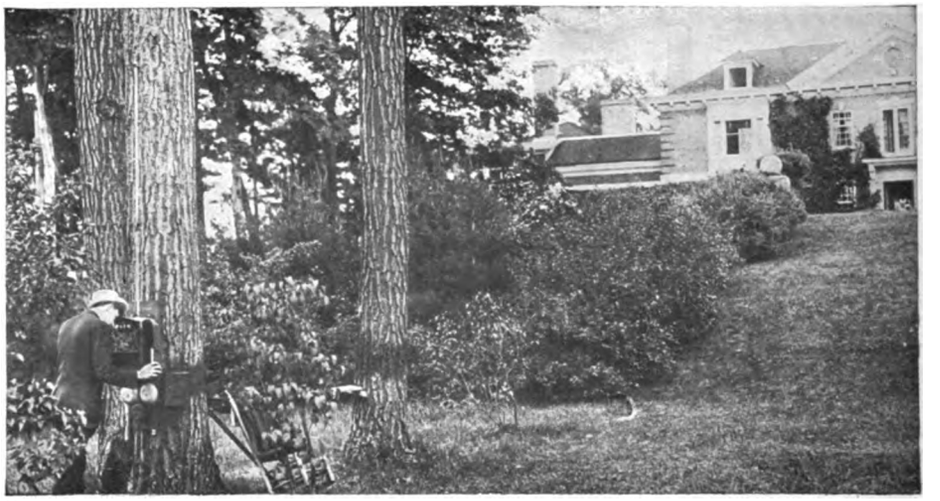
Wolverton, who was seriously injured in an automobile accident, decided that he could manage his team just as well from the hospital bed as from the bench. Wires were installed from the Seals' dugout at the baseball park to Wolverton's bedside, and he was kept informed of every move of the opposing teams. When his club was out of town a telegraph wire was substituted for the 'phone, and the disabled manager made suggestions, followed the play, and in general dictated the field policy of the Seals, in the same manner he would have had he been on the players' bench.

Baseball by telephone for players, and now for managers. What about the fans? It must indeed be an *emergency* use of the telephone, we think, that will ever take the place of the "grandmother's funeral," but the telephone does effective work for the business man who is at the game. Go to the game and watch it with your own eyes, and have a telephone at your elbow to keep you in touch with your business! Mr. C. E. Garvey, Plant Department, Newark, sends us the Newark *Evening Star's* account of a Westerner who practices this convenient form of "do your business by telephone."

His greatest pleasure is derived from watching ball games; and his principal business is wholesaling berries, beans, bananas, and other fruits and vegetables. In order to enjoy a ball game he was compelled to be away from his place of business and in order to attend to his business he had to be away from the ball games.

And so, the only problem was to find a method by which he could be in touch with both at the same time. During the "hot stove league season" he worked it out, and the following is what he did: First, he rented the end box along the third base line of the grand stand of the Topeka Western League park. Then he had the telephone company run a private wire from his place of business to his box at the park and had a special 'phone box constructed to keep the precious little instrument in while he was not using it.

Now Anderson doesn't know what it means to have business and pleasure conflict. When the time comes to go to the ball game he goes. Then if anyone wants to transact business with him, Anderson has the office connect the person with his ball park 'phone. Since the 'phone was installed Anderson has missed only one game in Topeka this season.



Telephones installed in the grounds of the Summer White House at Cornish, N. H., kept the secret service men in constant touch with the Central Office during President Wilson's vacation

President Surprised a Postmaster

By Talking Over a Telephone

THE President was taken for a town joker by the post office at Cornish, N. H., according to the newspapers. The assistant postmaster took down his receiver to be greeted by the request to wait a moment, as President Wilson would like to talk with him. Before he could launch his opinion of people who indulged in that sort of fooling, another voice inquired if certain information regarding the arrival and departure of mails could be obtained. "Yes," was the astonished reply, and in a few minutes President Wilson was at the door of the office, having motored over from the "Summer White House" to get the data he wanted.

"I thought someone was trying to be funny," the assistant postmaster is quoted as saying afterward, "but it was the President talking to me—and over a telephone at that."

An order was issued recently permitting postmasters to furnish, upon request, information by telephone relating to certain matters, but possibly this did not cover the information which President Wilson wanted, and so he had to come for it.

Columbia Opportunities

COLUMBIA UNIVERSITY this fall will begin to equip students for actual commercial life. The usual courses in English, mathematics, science, philosophy, modern languages, politics, and economics will be taught the first two years of the course, while the last two years will be devoted to accounting and finance, organization of business, methods of manufacture, transportation, commercial geography, business ethics, and the elements of law.

This step marks a recognition of the importance of the best possible equipment for business life on the part of the young men who are to enter upon it.

Columbia also offers in the late afternoons, evenings, and Saturdays, a large number of courses in accounting, chemistry, commerce, English, languages, mathematics, and physics, which are open to both men and women.

No entrance examinations are required, and students are allowed to select their subjects. For example, there are classes in accounting covering elementary accounting, the principles of accounting, practical accounting, cost accounting, auditing, advanced accounting, etc. In economics, there are classes in the principles of economics, business organization and administration, practical advertising, salesmanship, psychology of advertising, business finance, business statistics and statistical methods, etc.

There are classes in electrical engineering, mechanical engineering, drafting, architecture, hygiene, stenography and typewriting, etc., besides music, history, philosophy, physical education, sociology, and almost everything one needs to know or wants to learn.

The prices are very reasonable, most of the courses being only $12 for each half-year, some going as high as $18, while a few are more, all exclusive of books.

Further information may be obtained upon application to Dr. James C. Egbert, Director of Extension Teaching, Columbia University.

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Central Division Outing

The Potato Race

The largest number of entries in the athletic events was in the baseball throwing contest for ladies. Miss Clancy finally captured the first prize, a fine silk umbrella, by a record throw of 144 feet 6 inches, and Miss Daisy Lee was a close second.

Miss Foster won the potato race by a close margin over Miss Wood. The camera got in its good work here, as will be seen in the picture.

The ladies' 50-yard dash was also some event, as Referee Lane can testify.

E. J. Buchaca, the District Engineer, was voted the most popular man by the ladies. It is claimed, however, that he had an unfair advantage, as he has been taking private dancing lessons and is familiar with all the new steps. The ladies always like to dance, and Buchaca knows this.

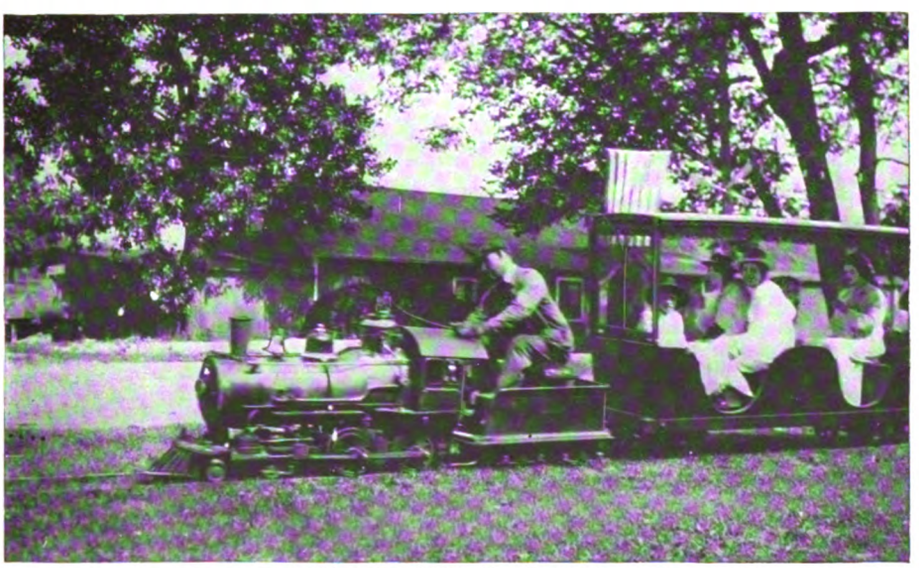
ON July 24, the third and most successful Annual Outing of the Central Division was held at Owasco Lake Park near Auburn, N. Y. Henry Van Der Bogart, Chairman of the Outing Committee, did himself justice, even to fixing things with the weather man.

The athletic events afforded the principal feature of entertainment and amusement, as will be seen from the accompanying photographs.

A crackerjack of a ball game was played between two picked teams with J. R. Lane, the Equipment Engineer, as umpire, and it is a question of doubt whether it was the game or Mr. Lane's decisions that afforded the most fun.

Miss Brown gave a demonstration in expert swimming and diving, and as "Little Jeff," the plant office boy, expressed it, she is some swimmer.

The Ball Game—Pitcher "Walt" Peet Delivering a Home Run



What the Kiddies Most Enjoyed

The kiddies also had a good time, and now A. L. Fox, Jr., is not satisfied until papa buys a little railroad just like the one they had at the picnic.

Syracuse Sunset League

EMPLOYEES of the Company in Syracuse have been exercising their muscles, wits, and voices all summer in enjoyment of the Great American Game. The Syracuse employees' Sunset Baseball League was described in the July issue, and the latest reports make good the promise shown there. According to our most recent information Team No. 2, Captain Wallace, stands at the top of the league, with five games won and none lost. Next comes Team No. 3, Captain Cartter, with three lost and one on the credit side, and last, Team No. 1, Captain Hartnett, with four lost and one to the good. C. W. Griggs, Secretary-Treasurer of the Central Division Athletic Association, says, "Captain Wallace had the smallest number of men to draw from in making up his team, but the men proved to be natural ball players and have furnished the surprise of the season."

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The TREND of REGULATION

By R. V. Marye, General Attorney

Connection with Private Intercommunicating Telephone System

THE First National Bank of Albany, Ore., installed and equipped its bank building with what is known as an intercommunicating telephone system. Prior to such installation the bank had been informed by the Pacific Telephone & Telegraph Company that said company did not connect its system with a private equipment installed and maintained by private individuals or corporations. Thereafter the telephone company in compliance with the request of the bank installed an individual telephone in a booth, which telephone was to be wholly separate from said private system. The bank, however, later, and without the knowledge or consent of the company, connected its private system with the company's line, and the latter, upon ascertaining that this connection had been made, disconnected its service to the bank and refused to reëstablish it unless the connection with the private system was eliminated, whereupon the bank applied to the Circuit Court of Linn County, Oregon, for an injunction to restrain the telephone company from discontinuing service and to compel it to reëstablish service.

The Court, in its decision of June 17, 1915, states that the bank is not entitled to an injunction since the telephone company does not undertake or hold itself out to furnish service in the manner or of the character demanded by the bank, and that the company, therefore, had the authority to discontinue its service under the circumstances, as it is not required by law to furnish service in the manner demanded by the bank nor has it made any agreement to do so, and that its refusal to continue service while connection with the intercommunicating system is maintained does not constitute discrimination against the bank, since the company is ready and willing to furnish to the bank service of the same character and at the same rates as it furnishes like service to other persons and corporations.

Obsolete Rates

JESSE L. HEISKELL and others, subscribers of the Chesapeake and Potomac Telephone Company, having old contracts for unlimited flat rate business service terminable by either party after the first year on ten days' notice, were notified by the company that service under said contracts would be discontinued at the expiration of ten days, and that thereafter service would be upon the standard measured rate basis as provided in the schedules filed with the Public Utilities Commission, whereupon they applied to the Supreme Court of the District of Columbia for an injunction restraining the company from discontinuing service under their flat rate contracts. The Court refused to grant the injunction, holding that the company had the right under the law to terminate the flat rate service; that the Public Utilities Act did not contemplate the perpetuation of both flat and measured rates for the same class of service or that a prospective user of a telephone might demand either, but that since the measured rates offered the plaintiffs were those which the company had established and which were in force within the meaning of the Public Utilities Act, the plaintiffs were not entitled to service upon any other basis.

Payment for Long Distance Messages; O. K. of Subscriber Not Necessary

THE Supreme Court of Arkansas, in the case of Southwestern Telegraph and Telephone Company *vs.* Sharp & White, decided on May 17, 1915, holds that a telephone company may require subscribers to pay for all long distance messages originating from subscriber's office, and that a subscriber may not insist that such messages be not charged to him unless O.K.'d by him. The Court held further that the mere fact that in some instances operators had requested subscribers to O.K. long distance messages did not justify a subscriber in insisting that all such messages should be O.K.'d.

Rates to Physicians

DR. F. E. PLUMMER, claiming that the United Telephone Company had refused to install a telephone in his residence unless he paid the regular business rate, and that his wife owned the residence and had repeatedly asked for a telephone for use solely for residence purposes, and had been denied service unless she paid the business rate, complained to the Public Utilities Commission of Ohio, which held, on May 13, 1915, that should the doctor's wife apply for a telephone in her residence to be used by herself and her family for ordinary purposes she would be entitled to service at residence rates, regardless of the fact that her husband maintained his office in the same building; but that service at such rate should continue only so long as the use of the telephone was absolutely for residence purposes, and that in the event that the doctor should at any time use the telephone for professional business the service at residence rates should be discontinued.

Mileage Book Rates

THE Public Service Commission of the Second District, New York, has refused to grant permission to the Ulster and Delaware Railroad Company to increase its mileage book rates. The Commission states that the Legislature, in conferring upon it authority to fix rates at which mileage books should be sold, did not intend to authorize the Commission to repeal or suspend the operation of Section 60 of the Railroad Law, known as the "Mileage Book Law," which provides that the maximum rate to be charged for such mileage books shall be 2 cents per mile. The Commission states further that while its power to approve an increase in rates or order a decrease is unquestioned, any such increase may not be in excess of the limit defined by law as a maximum and that the said Mileage Book Law has not been repealed by the Public Service Commission Law, despite the provision of Section 127 of the latter law which reads: "All other acts and parts of acts otherwise in conflict with this act are hereby repealed."

Commissioner Emmet dissented, holding that if the prevailing opinion of the Commission be right, no exercise of judgment by the Commission is possible and the Commission, instead of being a body organized to dispense even-handed justice, is a body organized primarily "to give an odor of sanctity and a color of right to repressive attacks upon private capital engaged in the public utility field." Commissioner Carr also dissented, holding that in enacting the Public Service Commission Law the Legislature intended to give full power to the Commission to fix and enforce rates either above or below those fixed by any other statute, if it appeared that existing rates were unreasonable either to the public or to the company.

"Cut-out" and "Cut-in" Charges

THE Tucson Gas, Electric Light and Power Company applied to the Corporation Commission of Arizona for authority to charge $1 for each "cut-out" and for each "cut-in," claiming that many of its customers, in order to avoid payment of a minimum charge during vacation periods, ordered their service suspended during their absence, and that such practice was unfair, as it requires applicant to be ready to serve such customers at all times without compensation. The Commission states that while it has authorized a "cut-in" charge to apply to delinquent consumers, believing this to be a proper method of encouraging prompt payment, to make such a charge general and to authorize the desired "cut-out" charge would, in effect, amount to an increase in the charge for service and cannot therefore be authorized.

Contract for Fixed Period Prohibited

THE City of Connersville, Ind., submitted to the Public Service Commission of that State a proposed contract with the Hydro Electric Light and Power Company under which, among other things, it was provided that the company should render service to the city for a period of ten years at a specified rate. The Commission refused to approve said portion of the contract, stating that the Utility Act of the State does not contemplate that cities and utilities may enter into a contract for a period of years fixing the price to be paid for service, but under said Act the rates to be charged are always subject to investigation and change by the Commission.

Fixing of Rates a Legislative Function; Municipality May Not Regulate Without Specific Authority

THE Supreme Court of the United States, in deciding an action brought by the Milwaukee Electric Railway and Light Company to restrain the Wisconsin Railroad Commission from enforcing an order reducing rates on the railroad below the point fixed by an ordinance of the city under which the company was operating, held that the statute under which the said ordinance had been passed gave no authority to the city to contract away the legislative authority to fix tolls and fares, and that a renunciation of such a sovereign right by the Legislature must be evidenced in terms so clear and unequivocal as to permit of no doubt as to their proper construction. The Court states further that there is nothing in the said statute conferring upon the city the right to contract in such a manner as to forestall the right of the State to subsequently pass upon the reasonableness of tolls and fares, and that, therefore, the judgment of the Supreme Court of the State to the effect that the order of the Commission in question was valid and enforceable should be affirmed.

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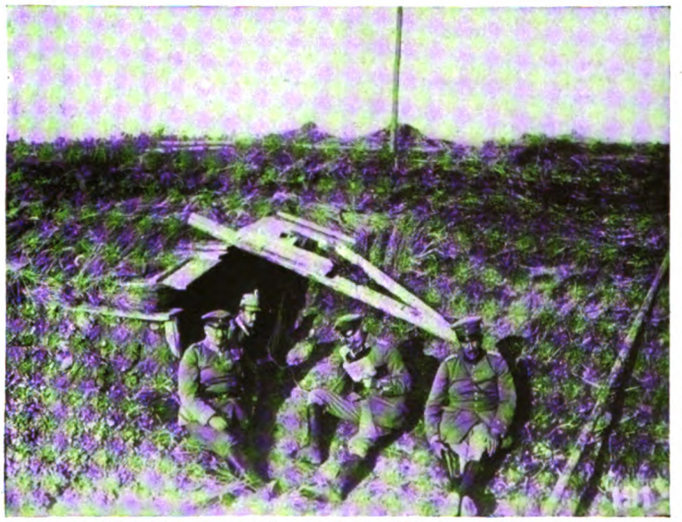
Italian Engineers Repairing Telephone Line Destroyed by Austrians Before Retreating

Germans Observing Enemy's Aeroplanes and Telephoning Observations to Staff Headquarters



Prince Eitel Friedrich, Second Son of Kaiser Wilhelm, Waiting for War News by Telephone

Italian Telephone and Telegraph Station in the Field

Turkish Outpost Telephoning to Headquarters in Gallipoli

French Telephone Outpost in Northern France

TELEPHONES IN THE EUROPEAN WAR

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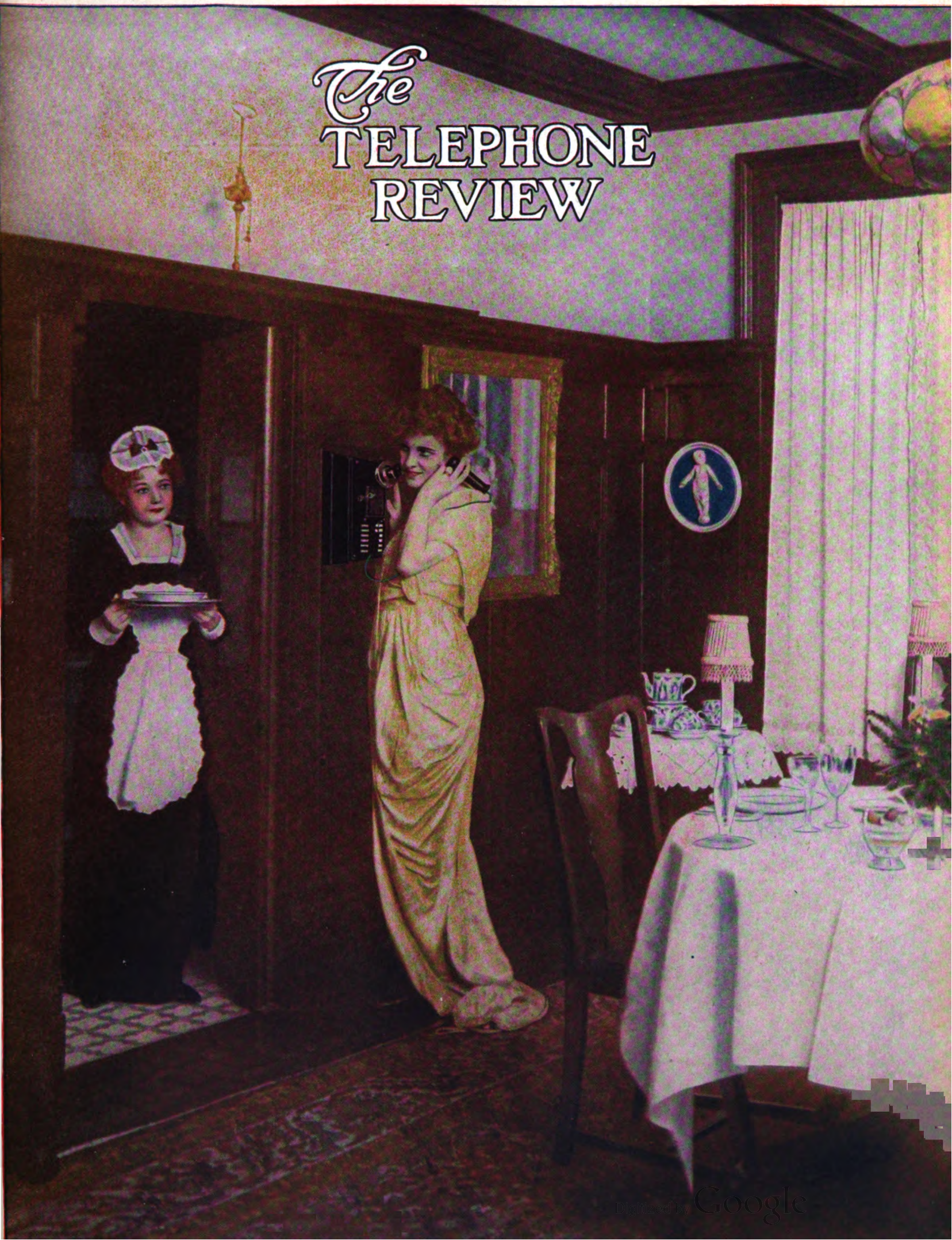
The TELEPHONE REVIEW



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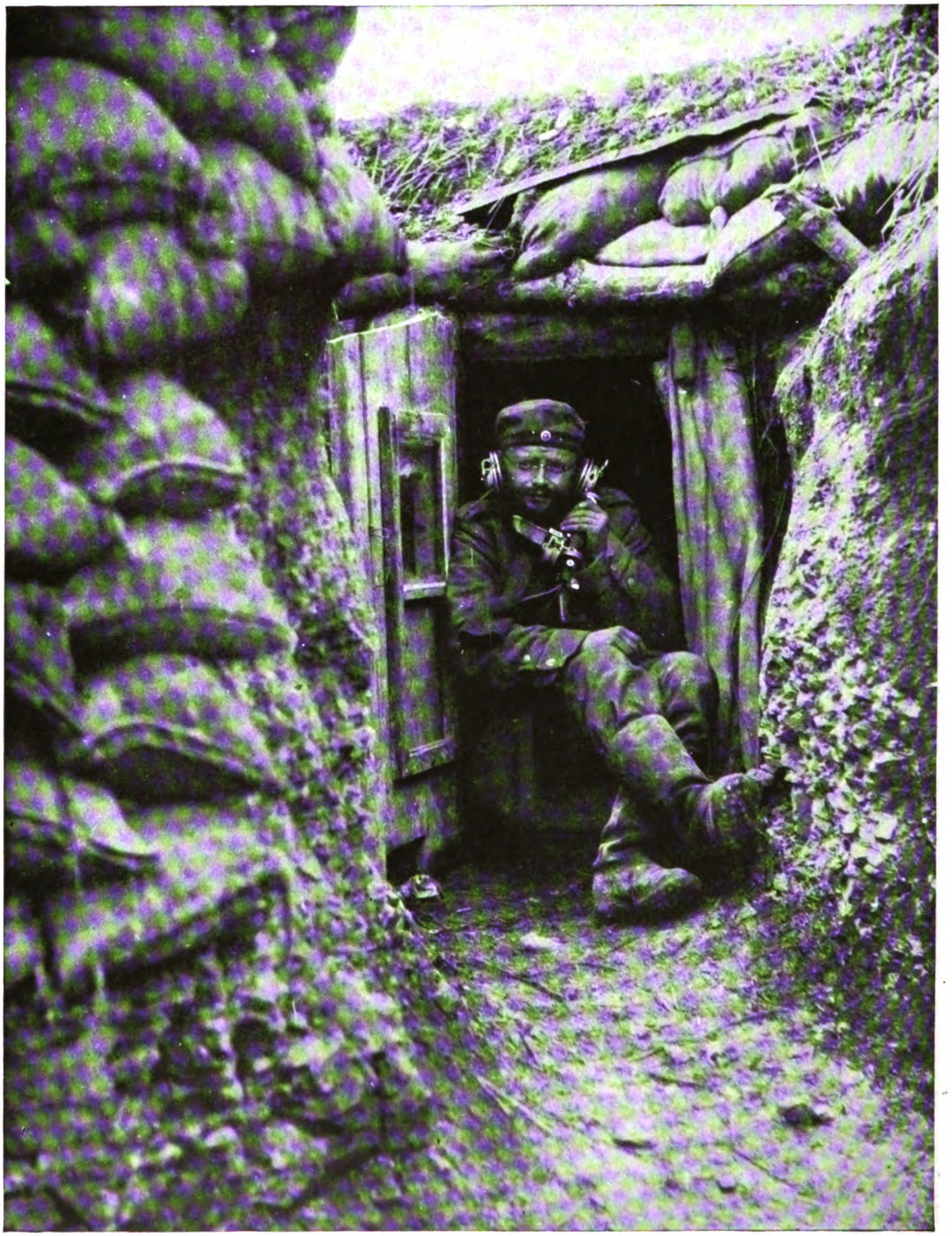

AN OBSCURE BUT ESSENTIAL UNIT AMONG FIGHTING MILLIONS

Upon the Telephone in All the Armies Often Depends the Tide of Battle

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The TELEPHONE REVIEW

VOLUME·6· NUMBER·10

NEW YORK
OCTOBER
1915

The TELEPHONE REVIEW

J. D. NEWMAN, Editor.

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VOL. VI. OCTOBER, 1915 NO. 10

Regarding Personal Mention

WHEN the announcement regarding THE TELEPHONE REVIEW was issued before the first number of the magazine was published, and all employees were told that they were at liberty to send contributions direct to the Editor and were urged to do so and share in making the magazine a success, "purely personal" items were excepted as not being desired. The idea was that "purely personal" items were of "purely local" interest, and therefore had no place in a magazine designed to be of broad general interest. On the other hand, "business personals" are welcomed, because what one employee does in a business way is of interest and value to all other employees. Now it is a curious fact that many employees are perfectly willing to send in "purely personal" items, but are too modest to contribute "business personals" about themselves. We have been told this innumerable times, by employees themselves, and by officials of the Company in various divisions when we have asked why we do not receive more items regarding the work which different men and women are doing.

Just why this should be so we cannot imagine. It seems to us it ought to be the other way. It is true that we are all engaged in the business all the time and want a little relaxation and variety once in a while, but that is no reason why the relaxation and variety provided by THE TELEPHONE REVIEW should not pertain to the business, since there are no other than business reasons why the magazine is published at all. Other kinds of relaxation and variety are to be obtained elsewhere in infinite diversity to suit all tastes, and it would be impossible for us to compete with them all in an effort to be entertaining. Besides, no good purpose would be served, even if it were possible.

What we are attempting to provide is something that cannot be obtained anywhere else, and that is, broadly, a channel through which all the serious, earnest, interested employees of this Company can contribute to the common good out of the wisdom and experience gained in the performance of the work which yields us our livelihood. It costs but little effort to write such an article and much benefit is derived from the mere act of writing; it is more than worth while for others to read it, for all accession of knowledge is helpful in our business.

The contents of our columns, from our first issue to the present, are a striking, and in the opinion of many competent critics, a remarkable illustration of what a splendid and capable organization this Company is, and they show, also, to whom belongs the credit for the enviable reputation which the Company enjoys in the public estimation, for in these columns are articles by employees in every grade and department, from the lowest to the highest—all on an equal basis and all equally interested in the great and noble work in which we are engaged.

Isn't it worth something definite and positive to us, and to our jobs, to keep in the closest possible touch with the progress of that great work as it is described by those who are doing it?

If you haven't been doing so, just read through, from cover to cover, in a few issues, what your fellow-employees have written and then say what you think should have been left out in order that we might have printed a lot of "purely personals," et cetera.

The best that any of us can do is none too good for the rest of us, and as practice makes perfect, now is the time to begin sending in your mite. We cannot print all we receive, so it is plain to see that the great majority think as we do.

False Economy

IT is a curious thing how much trouble many people will go to, to save using their brains. It might be supposed that the thinking apparatus bestowed on the human race were a fragile phenomenon, ready to vanish at the first call to action. The truth is exactly the contrary. Brain power profits nothing from conservation. In fact conservation is its destruction. The more exercise a brain gets, the more of a brain it is, and the less trouble we put it to, the less brain we'll have. Miserliness in matters of thought is perpetrated in exactly the opposite way from miserliness in matters of material possessions. The more thought we spend, the more we have. So it is the extreme of false economy to spare our brains.

No Government Ownership for the Telephone

NOT all advocates of government ownership believe in it. Some favor it only because they labor under the misconception that ownership is a function of our government, and that its exercise would be fulfilling a neglected obligation which private interests have usurped. Experience has demonstrated time and again that, when this error was pointed out to them, such advocates have been glad that individual liberty and opportunity are not hampered and handicapped by the Frankenstein theory of government ownership that has been conjured up. They admit the advantages of private ownership under government regulation, such as we now have. The right of the government to such ownership as is advocated does not exist under our republican Constitution; if exercised, it would have to

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be acquired, by a Constitutional amendment, from the people. Moreover, the present property owners would have to be recompensed for their interests.

Other advocates of government ownership favor it only as an alternative to "big business" in private hands, regardless of how big business might become, or how inefficiently conducted, in political, bureaucratic, and expensive governmental hands. And yet, upon looking into the matter carefully, such advocates admit that their arguments do not apply to the Bell System, whose methods and policies have so consistently been given the light of day that there is nothing to criticize, and whose service is so superior to all other in the world that it is realized a change would be a calamitous loss.

Such an advocate as the latter is Dr. James F. Moon, of East Orange, whose own letter, which we append hereto, is a forceful protest against the fallacious theory held by some who have not analyzed the question as he has.

485 CENTRAL AVENUE, EAST ORANGE, N. J.

August 3, 1915.

N. Y. Telephone Co., N. Y. City.

GENTLEMEN: Just a word to you in reference to "The Postalization of the Telephone." Instinctively I believe the man in the street is against big business. In the main, I believe it would be proved he is justified. I am opposed to big business or to any condition which weighs heavily against the people. But for years I have had my eyes and thoughts on your concern, and wish to state that I have found nothing to complain of and a very great deal to admire, and these things I intend to specify in this, the first communication I have ever had with you.

I do not believe the Government would give us the quick and efficient service at the cheap rate at which we now get it. As now conducted your concern is a purely cold-blooded business proposition where a man is retained in your service on the proposition of absolute efficiency—I do not believe there is any other force which binds or connects him to you.

Government control must involve political control, and that is bad where efficiency is desired. Some may question this statement and name the Parcel Post. If the Government paid for all expense caused by the accepting and delivering of any given package, as a private corporation would have to do, I am quite within bounds in saying there would be a huge deficit.

I have taken the trouble to examine exchanges and question inside and outside of these places the employees. I must admit that not one but spoke a good word for your company.

Let me state what has impressed me. For $30 per year one has installed free of charge a telephone service in his house. In some instances there goes with it an unlimited local service. He receives a prompt service the moment the receiver is removed—a courteous service always. And now for one very impressive thing—the bill at the first of the month.

There is something about this bill which has made a very strong appeal to me. There is never a mistake in that bill. That is a big statement to make, and in all my business career of seventeen years I have only known one other concern to do the same thing. Years ago I gave up examining the toll slip. I destroy it without a glance—put the bill on the file and pay it some time during the month it is received. When I get a bill from you I know I owe it.

When one considers the real service one does receive in this country—the immense number of telephone booths, the instant service as soon as the receiver is removed, I cannot see the least cause for complaint or the least sense in Government control.

If there be any who complain at any given toll rate, such complaint must be counterbalanced instantly by the satisfaction of the service rendered. Sometimes I have thought the toll rate a trifle high, and it was the satisfaction of quick and efficient service which controlled that thought—one has to pay for real service.

Personally I could only see disorganization with Government control in your branch. I do not believe there is another corporation as large as yours where its thousands of employees do not wish Government control. I cannot see one point that Government could better. If they gave us cheaper rates it would mean one of two things or both—surely both—poorer service—keeping us holding the wire—and a big deficit. The Telephone Company is about the only company I am quite satisfied to find outside Government ownership. I believe the Government should keep its eye on it and see that it does not go out of bounds. I am a great believer in Government ownership, but I believe even the Government can make a mess of some things.

I am sorry to put you to the time of reading this—it has been on my mind to do for years. If you knew me you would marvel that I could write thus, for I do not believe there is anything going that I have not assailed in the interest of the public good. But I have had *absolute* satisfaction in my telephone service. It has been courteously, silently, quickly, and cheaply administered to me. I am quite satisfied and I am firmly convinced that the Government could not better it.

Very truly yours,

DR. JAMES F. MOON.

The following reply to Dr. Moon was sent by Mr. Sylvan:

NEW YORK TELEPHONE COMPANY.
15 DEY STREET, NEW YORK,
August 18, 1915.

Dr. James F. Moon, No. 485 Central Avenue, East Orange, N. J.

DEAR SIR: In the absence of our President, Mr. Bethell, I take pleasure in acknowledging the receipt of your letter dated August 3, postmarked "East Orange, August 17."

The army of 120,000 faithful men and women, constituting the Bell Organization of the country, have been firm in their belief that the service rendered by the organization is in the very best interest of the people. To render efficient service over the entire country and to make possible communication from coast to coast, thus insuring the welfare of every section of our country, requires a large organization, or, in other words, "big business."

To have a busy man like yourself take the time to write such a kindly letter as you have written is an inspiration to all, and you may rest assured that it will be shown not only to the officials but also to the operators who handle your calls, to the accountants and clerks who keep records and render bills, to the men who maintain your lines and instruments, and to all who aid in furnishing your service. We shall constantly strive to merit your indorsement and to remedy promptly any defect called to our attention.

Aside from our inclination to furnish the best possible service at the lowest rate consistent with fairness to the many stockholders, we are under such regulation by State and National commissions as to positively assure proper conditions. It, therefore, seems incredible that any person can seriously advocate an experiment which would surely not improve the condition you so well describe, but, on the contrary, in view of general experience, would place in jeopardy the entire industry.

Again thanking you for your kindness in this matter, I beg to remain,

Yours very truly,

T. P. SYLVAN,
Assistant to Vice-President.

Painstaking Subscriber

A TROUBLEMAN in the Waverly district, Newark, left a wrench at the home of a subscriber, who wrote a card to the commercial office notifying the Company of the fact and asking that the wrench be called for. The subscriber's desire to restore the lost property even went so far as to urge him to artistic endeavors, and a neat pen-and-ink sketch of the wrench was shown on the postal card. The tool was recovered and the Company can be assured from the incident that there are some thoughtful subscribers.—A. F. MACHUGH, *Acting Wire Chief, Waverly.*

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Intercommunicating Residence Telephone Systems

By H. S. Koeppel, Local Commercial Manager, Glen Cove, L. I.

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THE Glen Cove local office district comprises about seventy square miles of territory including the sections served by the Glen Cove, Oyster Bay, Roslyn, and Wheatley Hills central offices. This particular part of Long Island, because of its comparative nearness to New York and the exceptional beauty of the surroundings, has become a favorite locality with New York millionaires for their country estates. In small residences one telephone is sometimes found to be enough, though the extension station for the second floor is an added convenience that is fast becoming a necessity. For larger houses a simple form of intercommunicating system becomes desirable, with stations in the butler's pantry and the garage. With the increase in size of the establishment the need for more complete intercommunication becomes intensified, and so we find, in large country estates, the intercommunicating telephone system brought to the most extensive and complete development it has yet attained. Comprehensive illustrations of the working possibilities of this sort of telephone service are afforded by the systems which we have installed on the estates of Mr. Harry Payne Whitney, Mr. H. S. Pratt, Mr. Charles A. Coffin, Mr. A. W. Hodenpyl, and others.

The system installed for Mr. Whitney at his Wheatley Hills estate is perhaps the most interesting in the variety of its adaptations. The estate is about one mile square and in order to be completely equipped with telephone service it required as a primary installation, two trunk lines and twenty stations. Sixteen of these stations are equipped with switching devices, and the other four, of the ordinary desk stand type, are supplied with various cut-out switches and ringing buttons, making the system extremely flexible and easily adaptable to the needs of the household. In addition to this main service there are three lines completing the telephone equipment of the estate. One line is for Mrs. Whitney's studio, one is an auxiliary to the house service, taking the overload on the other two lines of the system, and the third is connected to a telephone, equipped with a booth, and situated in the stable.

Before our intercommunicating system was installed, Mr. Whitney had used two other types of equipment; it was

Studio on Mr. Harry Payne Whitney's Wheatley Hills Estate

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Battery Cabinet, H. P. Whitney

Copyright, 1915, by New York Telephone Co.

Side View, West Wing, the Whitney Residence

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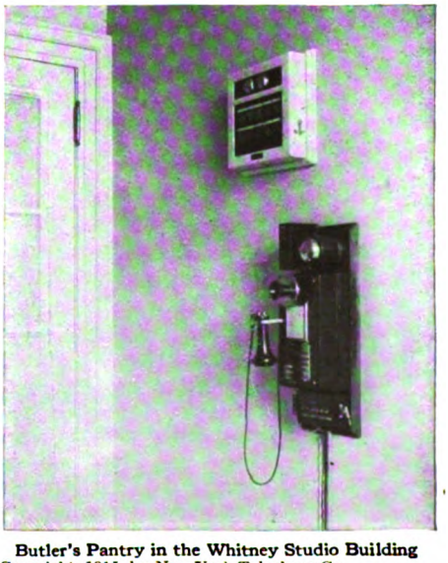

Butler's Pantry in the Whitney Studio Building

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Station	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Prvt. Line	Hse. Line
1. H. P. Whitney's room										x	x	x	x	x						x	x
2. Library (standard desk set with both C. O. lines wired in)																				x	x
3. Pantry				x	x	x	x	x	x	x	x	x	x	x	x	x	x		x		x
4. Coat room			x		x	x	x	x	x	x											x
5. E. Hall, second floor between guest rooms 1 and 2			x	x		x	x	x	x	x											
6. W. Hall second floor (children's room)			x	x	x		x	x	x	x											x
7. Servants' dining-room			x	x	x	x		x	x	x											
8. Servants' wing, third floor (bachelors' quarters)			x	x	x	x	x		x	x											
9. Carpenter shop			x	x	x	x	x	x		x											x
10. Pressing room			x	x	x	x	x	x	x												x
11. Garage			x									x	x	x	x	x	x		x		x
12. Stable, with extra station			x								x		x	x	x	x	x		x		
13. Tennis court			x								x	x		x	x	x	x		x		x
14. Studio			x								x	x	x		x	x	x		x		x
15. Windmill			x								x	x	x	x		x	x		x		
16. Farm			x																		x
17. Gymnasium			x								x	x	x	x	x	x			x		
18. Tennis court (master's room)																				x	x
19. Chauffeur's cottage			x								x	x	x	x	x	x	x				
Private C. O. line	x	x																x			
C. O. house line	x	x	x	x		x			x	x	x		x	x		x		x			

Intercommunicating System of Mr. H. P. Whitney's Residence

View of Mr. Whitney's Stables

Copyright, 1915, by New York Telephone Co.

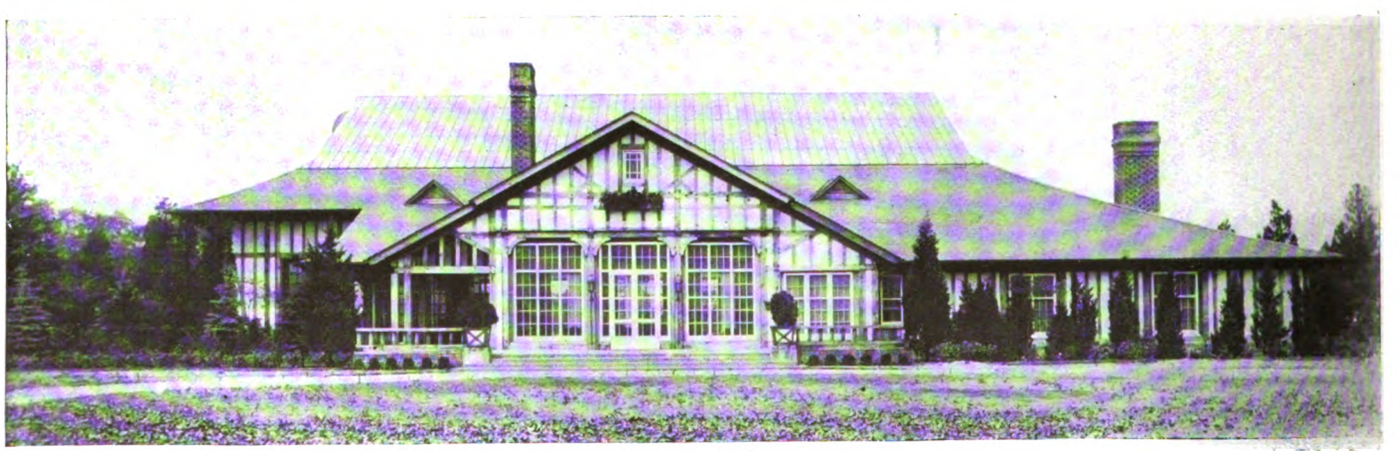
Gymnasium Building, Whitney Estate

Copyright, 1915, by New York Telephone Co.

the greater efficiency of the Company's system that made it possible for us to secure the contract.

The accompanying chart, outlining the location and intercommunication of the various stations in the system, will give a clear idea of how each station in the system is connected. The numbers of the stations at the left of the diagram correspond with the numbers at the top. Thus in ascertaining the intercommunication of any particular station the chart is read from left to right. For example station No. 1, Mr. Whitney's room, communicates, as indicated by crosses, with stations No. 10, pressing room, No. 11, garage, No. 12, stable, No. 13, tennis court and No. 14, studio, in addition to having access to the private line and house line.

Of the two lines wired into the intercommunicating system, one is known as the house line, being used for the general service throughout the estate, and the other as the private wire for the use of the immediate family only. The private line is wired into the library, master's room, and tennis court (master's room) stations, and is arranged so as to make it impossible for anyone to cut in and overhear any conversation on the line. If a station is using this private line, and any other station connected



Tennis Court Building, Whitney Estate

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Data on Purchase of A. T. & T. Co. Stock

By Employees of the Bell System as Per Plan Dated January 1, 1915

$110.00 Per Share

TERMS: Payments, $2.00 Per Month; Dividend, 8% Per Year; Interest, 4% Per Year

Designed and Prepared by P. A. Dunne, Traffic Department, New York Telephone Co., for "The Telephone Review"

				1 share	2 shares	3 shares	4 shares	5 shares	6 shares	7 shares	8 shares	9 shares	10 shares
Total Cash Paid	End of Quarter	1915	May 31	$ 6.00	$ 12.00	$ 18.00	$ 24.00	$ 30.00	$ 36.00	$ 42.00	$ 48.00	$ 54.00	$ 60.00
			Aug. 31	12.00	24.00	36.00	48.00	60.00	72.00	84.00	96.00	108.00	120.00
			Nov. 30	18.00	36.00	54.00	72.00	90.00	108.00	126.00	144.00	162.00	180.00
		1916	Feb. 29	24.00	48.00	72.00	96.00	120.00	144.00	168.00	192.00	216.00	240.00
			May 31	30.00	60.00	90.00	120.00	150.00	180.00	210.00	240.00	270.00	300.00
			Aug. 31	36.00	72.00	108.00	144.00	180.00	216.00	252.00	288.00	324.00	360.00
			Nov. 30	42.00	84.00	126.00	168.00	210.00	252.00	294.00	336.00	378.00	420.00
		1917	Feb. 28	48.00	96.00	144.00	192.00	240.00	288.00	336.00	384.00	432.00	480.00
			May 31	54.00	108.00	162.00	216.00	270.00	324.00	378.00	432.00	486.00	540.00
			Aug. 31	60.00	120.00	180.00	240.00	300.00	360.00	420.00	480.00	540.00	600.00
			Nov. 30	66.00	132.00	198.00	264.00	330.00	396.00	462.00	528.00	594.00	660.00
		1918	Feb. 28	72.00	144.00	216.00	288.00	360.00	432.00	504.00	576.00	648.00	720.00
			May 31	78.00	156.00	234.00	312.00	390.00	468.00	546.00	624.00	702.00	780.00
			Aug. 31	84.00	168.00	252.00	336.00	420.00	504.00	588.00	672.00	756.00	840.00
			Nov. 30	88.30	176.59	264.89	353.16	441.47	529.74	618.04	706.35	794.65	882.92
Total Dividends Rec'd †	End of Quarter	1915	May 31	$ 2.00	$ 4.00	$ 6.00	$ 8.00	$ 10.00	$ 12.00	$ 14.00	$ 16.00	$ 18.00	$ 20.00
			Aug. 31	4.00	8.00	12.00	16.00	20.00	24.00	28.00	32.00	36.00	40.00
			Nov. 30	6.00	12.00	18.00	24.00	30.00	36.00	42.00	48.00	54.00	60.00
		1916	Feb. 29	8.00	16.00	24.00	32.00	40.00	48.00	56.00	64.00	72.00	80.00
			May 31	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00
			Aug. 31	12.00	24.00	36.00	48.00	60.00	72.00	84.00	96.00	108.00	120.00
			Nov. 30	14.00	28.00	42.00	56.00	70.00	84.00	98.00	112.00	126.00	140.00
		1917	Feb. 28	16.00	32.00	48.00	64.00	80.00	96.00	112.00	128.00	144.00	160.00
			May 31	18.00	36.00	54.00	72.00	90.00	108.00	126.00	144.00	162.00	180.00
			Aug. 31	20.00	40.00	60.00	80.00	100.00	120.00	140.00	160.00	180.00	200.00
			Nov. 30	22.00	44.00	66.00	88.00	110.00	132.00	154.00	176.00	198.00	220.00
		1918	Feb. 28	24.00	48.00	72.00	96.00	120.00	144.00	168.00	192.00	216.00	240.00
			May 31	26.00	52.00	78.00	104.00	130.00	156.00	182.00	208.00	234.00	260.00
			Aug. 31	28.00	56.00	84.00	112.00	140.00	168.00	196.00	224.00	252.00	280.00
			Nov. 30	30.00	60.00	90.00	120.00	150.00	180.00	210.00	240.00	270.00	300.00
Total Interest Paid	End of Quarter	1915	May 31	$ 1.06	$ 2.12	$ 3.18	$ 4.24	$ 5.30	$ 6.36	$ 7.42	$ 8.48	$ 9.54	$ 10.60
			Aug. 31	2.05	4.10	6.15	8.20	10.25	12.30	14.35	16.41	18.46	20.51
			Nov. 30	2.97	5.94	8.91	11.88	14.85	17.82	20.79	23.77	26.75	29.72
		1916	Feb. 29	3.82	7.64	11.46	15.28	19.10	22.92	26.74	30.57	34.40	38.22
			May 31	4.60	9.20	13.80	18.39	22.99	27.59	32.19	36.80	41.40	46.00
			Aug. 31	5.31	10.61	15.92	21.21	26.52	31.83	37.13	42.45	47.75	53.06
			Nov. 30	5.94	11.88	17.82	23.74	29.69	35.63	41.56	47.52	53.45	59.39
		1917	Feb. 28	6.50	13.00	19.50	25.98	32.49	38.99	45.48	52.00	58.49	64.98
			May 31	6.99	13.97	20.96	27.92	34.92	41.90	48.88	55.88	62.86	69.83
			Aug. 31	7.40	14.79	22.19	29.56	36.97	44.36	51.75	59.16	66.55	73.93
			Nov. 30	7.73	15.46	23.19	30.90	38.64	46.36	54.09	61.83	69.56	77.27
		1918	Feb. 28	7.99	15.98	23.96	31.93	39.93	47.90	55.89	63.89	71.88	79.84
			May 31	8.17	16.34	24.50	32.65	40.83	48.98	57.15	65.33	73.50	81.64
			Aug. 31	8.27	16.54	24.81	33.06	41.34	49.59	57.86	66.14	74.42	82.66
			Nov. 30	8.30	16.59	24.89	33.16	41.47	49.74	58.04	66.35	74.65	82.92
Total Equity	End of Quarter	1915	May 31	$ 6.94	$ 13.88	$ 20.82	$ 27.76	$ 34.70	$ 41.64	$ 48.58	$ 55.52	$ 62.46	$ 69.40
			Aug. 31	13.95	27.90	41.85	55.80	69.75	83.70	97.65	111.59	125.54	139.49
			Nov. 30	21.03	42.06	63.09	84.12	105.15	126.18	147.21	168.23	189.25	210.28
		1916	Feb. 29	28.18	56.36	84.54	112.72	140.90	169.08	197.26	225.43	253.60	281.78
			May 31	35.40	70.80	106.20	141.61	177.01	212.41	247.81	283.20	318.60	354.00
			Aug. 31	42.69	85.39	128.08	170.79	213.48	256.17	298.87	341.55	384.25	426.94
			Nov. 30	50.06	100.12	150.18	200.26	250.31	300.37	350.44	400.48	450.55	500.61
		1917	Feb. 28	57.50	115.00	172.50	230.02	287.51	345.01	402.52	460.00	517.51	575.02
			May 31	65.01	130.03	195.04	260.08	325.08	390.10	455.12	520.12	585.14	650.17
			Aug. 31	72.60	145.21	217.81	290.44	363.03	435.64	508.25	580.84	653.45	726.07
			Nov. 30	80.27	160.54	240.81	321.10	401.36	481.64	561.91	642.17	722.44	802.73
		1918	Feb. 28	88.01	176.02	264.04	352.07	440.07	528.10	616.11	704.11	792.12	880.16
			May 31	95.83	191.66	287.50	383.35	479.17	575.02	670.85	766.67	862.50	958.36
			Aug. 31	103.73	207.46	311.19	414.94	518.66	622.41	726.14	829.86	933.58	1037.34
			Nov. 30	110.00	220.00	330.00	440.00	550.00	660.00	770.00	880.00	990.00	1100.00
Tot. Amt. to be Paid on Stock	End of Quarter	1915	May 31	$ 103.06	$ 206.12	$ 309.18	$ 412.24	$ 515.30	$ 618.36	$ 721.42	$ 824.48	$ 927.54	$1030.60
			Aug. 31	96.05	192.10	288.15	384.20	480.25	576.30	672.35	768.41	864.46	960.51
			Nov. 30	88.97	177.94	266.91	355.88	444.85	533.82	622.79	711.77	800.75	889.72
		1916	Feb. 29	81.82	163.64	245.46	327.28	409.10	490.92	572.74	654.57	736.40	818.22
			May 31	74.60	149.20	223.80	298.39	372.99	447.59	522.19	596.80	671.40	746.00
			Aug. 31	67.31	134.61	201.92	269.21	336.52	403.83	471.13	538.45	605.75	673.06
			Nov. 30	59.94	119.88	179.82	239.74	299.69	359.63	419.56	479.52	539.45	599.39
		1917	Feb. 28	*52.50	*105.00	*157.50	*209.98	*262.49	*314.99	*367.48	*420.00	*472.49	*524.98
			May 31	44.99	89.97	134.96	179.92	224.92	269.90	314.88	359.88	404.86	449.83
			Aug. 31	37.40	74.79	112.19	149.56	186.97	224.36	261.75	299.16	336.55	373.93
			Nov. 30	29.73	59.46	89.19	118.90	148.64	178.36	208.09	237.83	267.56	297.27
		1918	Feb. 28	21.99	43.98	65.96	87.93	109.93	131.90	153.89	175.89	197.88	219.84
			May 31	14.17	28.34	42.50	56.65	70.83	84.98	99.15	113.33	127.50	141.64
			Aug. 31	6.27	12.54	18.81	25.06	31.34	37.59	43.86	50.14	56.42	62.66
			Nov. 30	–	–	–	–	–	–	–	–	–	–

*Balance due on stock March 1, 1917.
†These figures are based on 8% dividends being declared.
Note: These figures are based on the official rates of interest as charged by the A. T. & T. Co.

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WIRELESS TELEPHONE SPECIAL

SUPPLEMENT

THE TELEPHONE REVIEW

VOL. 6 NEW YORK, OCTOBER, 1915 No. 10

HOT upon the heels of the opening of the Transcontinental Telephone Line and its dedication to the use of the public, comes another epoch-making achievement by the Bell System; the wireless telephone is born in fact, to become an adjunct to the wire service, and the speaking voice has been carried "on the ether's invisible breast" a distance greater than has ever been spanned by a wire.

An achievement equally as wonderful as the Transcontinental Telephone Line service, was presaged in Mr. Vail's tribute to Mr. Carty and his subordinates when he said in the telegram sent from Jekyl Island on January 25:

> You have more than accomplished that which you dreamed of five years ago, and that which you have accomplished stands as your sponsor for making tangible, during the next five years, the dreams now in your mind.

Mr. Carty's dream of transcontinental wireless telephony was then well advanced toward realization, but his vision saw beyond the stage so near perfection, and he applied his genius to attaining the ultimate goal. What that ultimate goal is perhaps Mr. Carty himself knows only as the shadow of a dream, but the step which has been made staggers the imagination and is fraught with boundless possibilities.

The wonders the future holds in store may be awaited with confidence in the engineers of the Bell System.

"HELLO, Carty; this is Mr. Vail." "This is fine; this is wonderful," replied Mr. Carty.

Such a greeting and such a reply are not infrequent between these two gentlemen at headquarters in New York, but these messages will become historic as marking the realization of one of Mr. Carty's dreams of wireless telephony, for on September 29, 1915, Mr. Vail spoke into his telephone transmitter in his office in Dey street; his words were carried over the long distance telephone line to the naval radio station at Arlington, Va., whence they were sent by the Bell wireless telephone transmitter to the Bell wireless receiver attached to the naval radio station located at Mare Island, Cal., and were heard by Mr. Carty, who was there directing the experiment.

The Bell wireless system is not yet fully installed at Mare Island, the receiving apparatus only being in position there; hence, it was impossible for messages to be telephoned back by wireless, but all the messages sent from or by way of the Arlington tower were recorded at Mare Island, and their receipt fully confirmed by the officials in their reports by wire.

During the day a similar and equally successful demonstration took place at Arlington, where engineers of the A. T. & T. Co. and the Western Electric Company, and officials of the Army and Navy talked direct to Mare Island by wireless. Within the next twelve hours wonders piled on wonders in wireless telephony and even more marvelous records were made. From the radio station in San Diego came word that the talk from New York had been heard there over the wireless, and later on a similar report came from Darien, on the Isthmus of Panama. The aerial distance from New York to San Francisco is 2,500 miles, to San Diego 2,300 miles, and to Darien 2,100 miles. These records were enough to make September 29 an epochal day in the history of science, but a new and greater thrill came to the public when

BELL WIRELESS TELEPHONE SUCCESSFULLY DEMONSTRATED

SEPTEMBER 29, 1915

American Telephone & Telegraph Company Officials present at 15 Dey Street—Mr. THEODORE N. VAIL, President, seated. Standing (left to right)—Messrs. BANCROFT GHERARDI, Engineer of Plant; UNION N. BETHELL, Senior Vice-President; F. A. STEVENSON, General Superintendent of Plant; K. W. WATERSON, Engineer of Traffic; W. MURRAY CRANE, Director; O. B. BLACKWELL, Engineer; JOHN I. WATERBURY, Director; H. P. CHARLESWORTH, Engineer; H. CHRISTOPHER, Special Wire Man, New York Telephone Company. The Speakers Were: Mr. Vail, Mr. Bethell, Mr. Waterbury, Mr. Gherardi and Mr. Charlesworth.

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Lloyd Espenschied, an engineer of the A. T. & T. Co., cabled from Pearl Island, near Honolulu, Hawaii, 4,900 miles from Washington, that he had heard a message from the Arlington tower and had clearly recognized the voice of R. A. Heising, of the engineering staff of the Western Electric Co. Rear-Admiral Bousch, Lt. Commander Furer, and Lieutenant Lando, who took part in the tests and listened in at Honolulu, were highly pleased. Mr. Espenschied had been sent by Mr. Carty to the far-off Pacific Island several months ago, carrying with him receiving instruments, and erecting an improvised wireless station on the island. When it is remembered that not only London, Paris, and Berlin are nearer New York than Honolulu, but that it is farther away than Petrograd and even the North Pole, the magnitude and importance of this accomplishment may be partially realized.

THE results obtained in talking by wireless telephone from New York and Washington to San Francisco and Hawaii, were a culmination of long and very important investigations and discoveries which have been made by the engineers of the American Telephone & Telegraph Company and the Western Electric Company. These investigations have extended over a considerable period. During the early spring of this year, as a result of the work already done, the engineers of the Telephone Company talked over a distance of about 250 miles, using for the purpose an experimental tower which they had erected near Montauk Point, L. I., and a small tower borrowed for the purpose from private owners at Wilmington, Del. Soon after that they talked over 1,000 miles, in this case using the experimental tower at Montauk Point and an experimental tower erected for the purpose at St. Simon's Island, Ga. The results of those tests so conclusively demonstrated the correctness of their work and its possibilities that steps were immediately taken to try distances comparable with those involved in transatlantic telephony, and, indeed, even looking to transpacific telephony. What the results of these further tests have been is shown by the talks to San Francisco and Hawaii.

By permission of the naval authorities, Government wireless stations were used in the tests. The sending was done from the Navy wireless station at Arlington. The receiving was done on small wireless antennæ designed by the American Telephone & Telegraph Company and the Western Electric Company and erected by engineers of the Bell System on the U. S. Wireless Stations at Mare Island, Cal., and Pearl Harbor, Hawaii. Receiving antennæ had also been erected at San Diego, Cal., and at Panama, and these stations "listened in."

This latest development of the science of telephony which the engineers of the Bell System have produced, was officially demonstrated on September 29, 1915, a date which takes its place beside January 25, 1915, and March 10, 1876.

EVER since the telephone was invented, scientists throughout the world have sought a means of communication without wires. Every experiment has had the telephone as its basis, and the success of wireless telegraphy was made possible only through the use of Dr. Bell's invention. All efforts to transmit the human voice without the medium of wires have failed of practical results until the scientists of the Bell System succeeded.

Mr. Carty himself sees no obstacle to the human voice's encircling the globe. It is easily within the range of possibility by means of this most recent advance that has been made by the Bell System, for a speaker into a Bell telephone anywhere to send his voice entirely around the world and after its 25,000 mile trip have it returned to him through the receiver of the same instrument.

MR VAIL says about this latest achievement of the body of scientists and engineers Mr. Carty has gathered together:

I do not think that I can better express my views in regard to wireless telephony than to quote the telegram which I have just sent to Mr. Carty, the Chief Engineer of this Company, with reference to yesterday's wireless telephone talks:

> I want to congratulate you on yesterday's climax in the way of achievements, the greatest in intercommunication that the world has ever seen.
>
> To you and the wonderful staff, created by you, the world owes a debt.
>
> To throw your voice directly without the aid of wires from Washington to Hawaii, nearly 5,000 miles, a greater distance than from New York to Paris, Berlin, Vienna, or Petrograd, and greater than that between Seattle and Tokio and Yokohama, was wonderful, but to send the recognized voice part way over wire and part through the air was still more wonderful, and was the demonstration of the chiefest use that will probably attach to the wireless as amplifying and supplementing, not substituting, the wire system and bring into conversational communication ships, islands, and places which cannot otherwise be reached.
>
> Your work has indeed brought us one long step nearer our "ideal"—a "Universal System."

It is clear that wireless will never substitute or supplant the wire systems but will greatly amplify them and extend their usefulness. It is humanitarian rather than commercial, but it is useful in that it makes conversation possible between places, and between places and moving objects, and between moving objects that could not be connected by wire. As with the wireless telegraph, it probably never will be dependable enough except as outlined above.

GROUP AT THE U. S. NAVY WIRELESS STATION AT ARLINGTON

Participants in the Bell Wireless Telephone Demonstration

(Left to Right)—P. G. BURTON and J. E. BOISSEAU, C. & P. Telephone Co.; Col. SAMUEL REBER, in charge of Aerial Signal Service U. S A.; Lt. Com. S. E. HOOPER, U. S. N.; R. A. HEISING, W. E. Co.; W. H. SCHOTT, A. T. & T. Co.; Lt. BASTEDO, U. S. N.; Lt. R. B. COFFMAN, U. S. N.; JOHN MILLS, A. T. & T. Co.; Capt. W. H. G. BULLARD, U. S. N., Supt. U. S. Radio Service; W. H. EVERETT, W. E. Co.; F. B. JEWETT, Asst. Chief Engineer, W. E. Co.; Lt. Com. S. W. BRYANT, U. S. N.; H. H. PECHIN, Official Stenographer; JOHN KIRBY (front), Newspaper Reporter; J. W. GEORGE (back), A. T. & T. Co.; E. H. COLPITTS, W. E. Co.

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MR. BETHELL referred to this new triumph of science as follows:

This romantic incident—this talking by wireless across the continent—means another epoch in the development of the art of transmitting intelligence by electricity. The talking was very satisfactory. Words and sentences uttered from New York were repeated back from San Francisco with absolute accuracy, and even my voice was recognized immediately when I spoke into the transmitter. Another wonderful achievement is to be credited to the Bell organization, and for the second time within a year its engineers have presented this country with a marvelous triumph of science and magnificent aid to civilization, commerce, and society.

The exhaustive studies of our engineers concerning the matter of wireless telephony have given clear indications of both its possibilities and its limitations.

The possibilities of wireless telephony, great as they are, will be mainly in the direction of extending the use of the wire systems, and its greatest utility will probably always be as auxiliary, tributary, and supplementary to the older systems. For emergency and special use the new invention offers thrilling suggestions and its practical and economic value should not be underestimated, but much of this is in its connection with the wire systems. Its great value will be to supplement and extend the telephone wire system in those situations where it is impossible to string wires, and its use over wide expanses of water, desert, etc., opens up attractive fields to the imagination, especially when some way is found to overcome the well-known disturbances which interfere so much with all wireless communications, whether telephone or telegraph. In spite of this, however, the value of wireless telephony can hardly be estimated and it is sure to be helpful beyond expression in making a neighborhood of nations.

COLONEL SAMUEL REBER, who is in charge of the Aerial Signal Service of the Army, and who was present at the demonstration in Washington and talked by Bell wireless to San Francisco, is enthusiastic in his praise of the achievement. He said:

The recent successful transcontinental transmission of speech between Washington and San Francisco marks an epoch not only in technical achievement but also in the development policy of a great corporation. When conversing some two years ago with Mr. J. J. Carty, the Chief Engineer of the A. T. & T. Co., on the economic destiny of the telephone, he stated one of the goals sought by his company was the development of the truly universal telephone service. With this object in view his engineering force, which is one of the most able corps of engineers and scientists ever gathered together, had been working for some time on the problem both from the standpoint of wire and wireless transmission. Transcontinental wire transmission was publicly demonstrated for the first time last January and the Transcontinental wireless transmission follows the celebration of the former great technical achievement after a period of less than a year. The transmission of audible speech to Europe by wireless can be taken as an assured fact, and it would have been attempted ere this had conditions on the other side been favorable. I cannot express my appreciation of this wonderful achievement in too high terms, and I heartily congratulate Mr. Carty and his corps of able assistants for their great technical achievement in annihilating distance for audible speech either with or without wires.

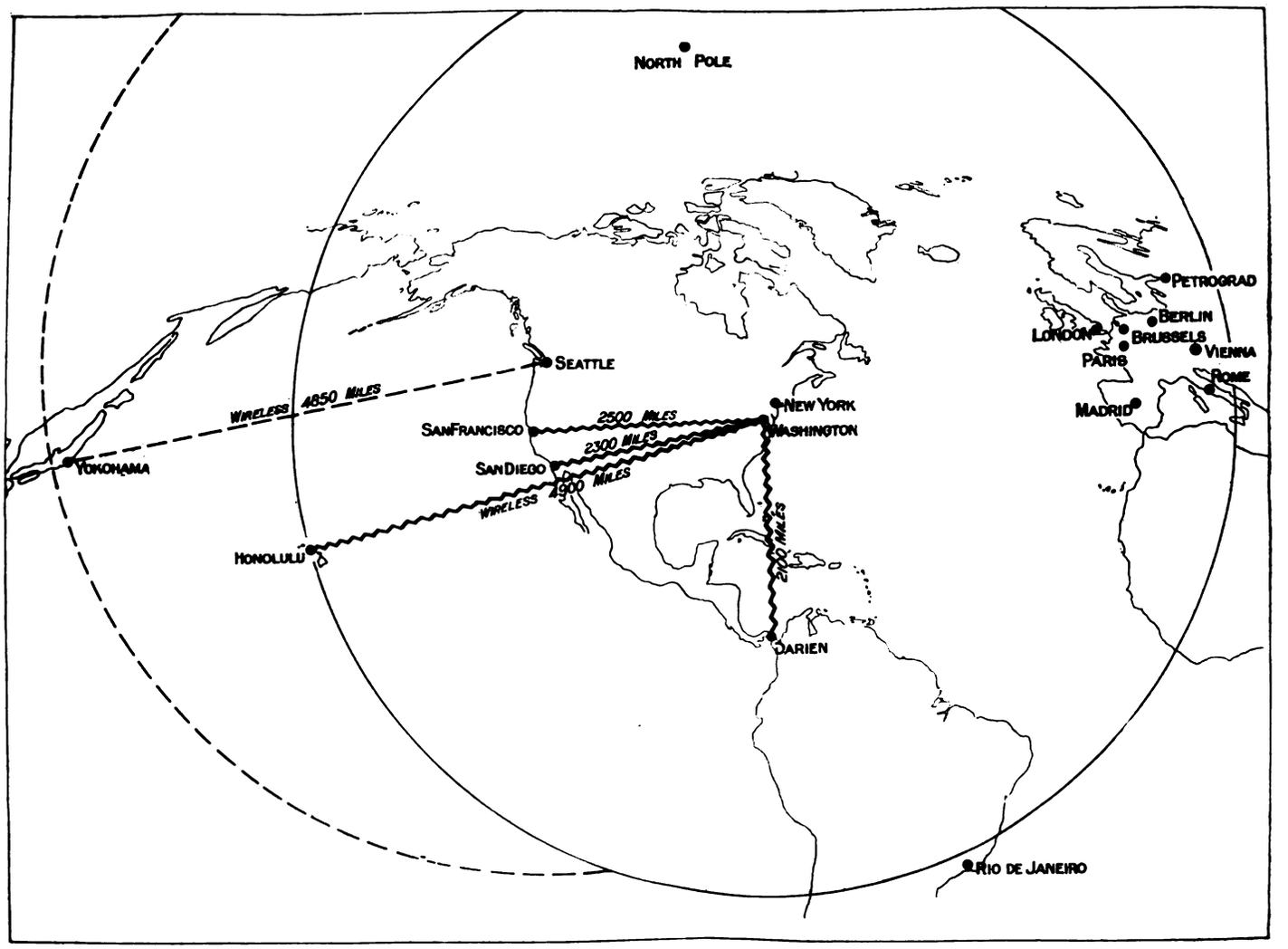
AFTER the successful demonstration of the Bell wireless telephone, Mr. Vail sent the following telegram to Secretary Daniels:

NEW YORK, September 29, 1915.

Honorable Josephus Daniels, Secretary of the Navy, Washington, D. C.

Personally and as President of the American Telephone and Telegraph Company I wish to express to you my thanks for the courtesy of the Navy Department in extending to us the privilege of connecting special wireless telephone apparatus to the Navy Department wireless telegraph towers. By means of this special apparatus we have to-day successfully carried on wireless telephone communication from the Atlantic to the Pacific coast.

THEODORE N. VAIL.



WHERE THE BELL WIRELESS TELEPHONE REACHES

The main circle shows the territory within a radius from Washington of 4,900 miles, the distance from Washington to Honolulu, which was reached by a Bell wireless telephone message, September 29, 1915. The same message could have been heard at a properly equipped radio tower at any point within the circle. The dotted circle of equal radius shows that a telephone message from a wireless station at Seattle could be heard at Yokohama.

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THE following telegrams and letters sent after the wireless telephone triumph of September 29, stand for more than they express in words. They are typical of the whole warm spirit of devotion, of generous co-operation, and appreciative loyalty that quickens the workers of the Bell System.

NEW YORK, September 29, 1915.

J. J. Carty, Chief Engineer, American Telephone & Telegraph Company, San Francisco, Cal.

I want to congratulate you on yesterday's climax in the way of achievements, the greatest in intercommunication that the world has ever seen.

To you and the wonderful staff, created by you, the world owes a debt.

To throw your voice directly without the aid of wires from Washington to Hawaii, nearly 5,000 miles, a greater distance than from New York to Paris, Berlin, Vienna, or Petrograd, and greater than that between Seattle and Tokio and Yokohama, was wonderful, but to send the recognized voice part way over wire and part through the air was still more wonderful, and was the demonstration of the chiefest use that will probably attach to the wireless as amplifying and supplementing, not substituting, the wire system and bring into conversational communication ships, islands, and places which cannot otherwise be reached.

Your work has indeed brought us one long step nearer our "ideal"—a "Universal System."

THEO. N. VAIL.

SAN FRANCISCO, CAL., September 30, 1915.

F. A. Stevenson, Genl. Supt. Plant, American Telephone and Telegraph Company, New York.

I cannot sufficiently express my sincere feeling of appreciation and admiration for the magnificent work of your department and all of your associates who have participated in the establishment of the transmission of speech, without the use of wires, across the continent from Washington to San Francisco.

The magnificent wire service, both telegraph and telephone, to all parts of the country, which you have provided for us as an adjunct to our long continued experiments, and the remarkable discipline and admirable precision with which the forces scattered over a continent worked under your direction, calls for my unbounded admiration. To all of these men and to yourself, I tender my most sincere congratulations.

J. J. CARTY,
Chief Engineer, A. T. & T. Co.

NEW YORK, October 1, 1915.

J. J. Carty, Chief Engineer, American Telephone & Telegraph Co., San Francisco, Cal.

Sincere thanks for your telegram. I can only again repeat to you that the opportunity to work along with you in this wonderful achievement, the confidence you placed in us during the development stages, your expressed appreciation of our efforts, have been and will be one of the greatest incentives and feeling of reward to every one in the Long Lines Plant Department.

It will give me the greatest satisfaction to transmit your telegram through the Department.

F. A. STEVENSON,
General Superintendent of Plant.

SAN FRANCISCO, CAL., September 30, 1915.

To B. Gherardi, Engineer of Plant, American Telephone and Telegraph Company, New York.

To you and to Mr. Jewett and to all of the engineers who have engaged in such masterful coöperation to accomplish the magnificent achievement of talking without wires between Washington and Honolulu, I extend my sincere congratulations, and I wish I could express to you in some adequate manner my feelings of gratitude for the work you have done, and how proud I am to feel that I am with you all a part of our wonderful company organization.

J. J. CARTY,
Chief Engineer.

NEW YORK, October 1, 1915.

John J. Carty, Chief Engineer, San Francisco, Cal.

On behalf of all of the engineers of the American Telephone and Telegraph Company and on my own behalf I thank you for your telegram of congratulation in regard to the wireless telephone achievement of talking between Washington and Honolulu. We have followed and you have led in this work. We all congratulate you and thank you for your able leadership and inspiration, without which the results could not have been attained.

BANCROFT GHERARDI, *Engineer of Plant.*

NEW YORK, October 1, 1915.

Mr. F. B. Jewett, Assistant Chief Engineer, Western Electric Company, 463 West Street, New York.

MY DEAR MR. JEWETT:—

I take the greatest pleasure in sending you herewith a copy of a telegram just received from Mr. Carty. It would be impossible to overestimate or to overstate the splendid part which you and all of the other Western Electric engineers had in bringing about the triumph of wireless telephony just accomplished. I wish it were possible for me to personally meet and congratulate each of the very large number of your engineers who has been engaged on this work, but as I cannot do so now I will ask you to inform them in regard to Mr. Carty's telegram and the views of all of the American Telephone and Telegraph engineers in regard to this matter.

Yours sincerely,

B. GHERARDI,
Engineer of Plant.

NEW YORK, October 1, 1915.

J. J. Carty, Chief Engineer, San Francisco, Cal.

Words fail wholly to express even a fraction of my appreciation of your telegram to Gherardi and me and through us to the men who have given all they had in them to help make possible our wonderful accomplishment of talking without wires from Washington to Honolulu. I voice the unanimous feeling of all in saying that whatever we have achieved is due to the inspiration of your leadership.

FRANK B. JEWETT,
Asst. Chief Engineer, Western Electric Co.

NEW YORK, October 1, 1915.

Memorandum for Mr. Blackwell, Transmission and Protection Engineer.

I am attaching hereto a copy of a telegram from Mr. Carty and a copy of my acknowledgment thereof. If I could add any words to Mr. Carty's telegram to express my appreciation of the work of our engineers I would do so. Will you kindly see that all of the engineers concerned are informed?

B. GHERARDI,
Engineer of Plant.

NEW YORK, October 1, 1915.

Mr. E. H. Colpitts, Research Engineer.

I am sending you herewith a copy of Mr. Carty's telegram and a copy of my reply. Also a copy of Mr. Gherardi's letter to me. Will you see that all of the men get copies? You and the others already know how much I appreciate what the men have done and the pride I take in them.

F. B. JEWETT,
Assistant Chief Engineer.

Uses and Limitations

THERE are many sharp limitations to the use of the ether for talking purposes, and it cannot be drawn on too strongly by the scientist. It will accomplish miracles, but it must not be overtaxed. Millions of messages going in all directions, crossing and recrossing each other, as they do every day by wire, are an impossibility by wireless telephony.

The limitations of the use of the wireless are best understood when it is remembered that all its messages must be carried by one common conductor. In telephony by wire every man may have his own private wire; in wireless all the world is restricted to the use of one general medium or conductor—the universal ether. Only a limited number of messages may be sent at the same time.

Proper weather conditions may be absent for months at a time. A thunder shower makes sad havoc with the use of the wireless; even sunlight may make sending impossible. The very fact that Nature does so much herself in transmitting wireless messages seems to give her the privilege of withdrawing her help at any time and without notice.

A wireless message, unlike one by wire, radiates in every direction, as sound does, and will probably always be subject to "listening in." It can be heard by anyone, anywhere, who has a proper receiver properly tuned. The almost absolute privacy of the wire cannot be insured for it, and, while this will not interfere with the use of the wireless for its evident and very practical purposes, that fact alone would prevent it from ever being a serious rival of its more confidential sister.

Whatever the future or limitations of wireless telephony, there is no doubt as to the place it will take among the great scientific accomplishments of the age. Merely as a scientific discovery or invention, it ranks among the greatest wonders of civilization. Much as the imagination was appealed to by the tremendous leap of the voice across 3,400 miles on the Transcontinental Line, there is something infinitely more fascinating in this new triumph of the engineers of the Bell System.

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Butler's Pantry in Main Residence, Mr. H. P. Whitney
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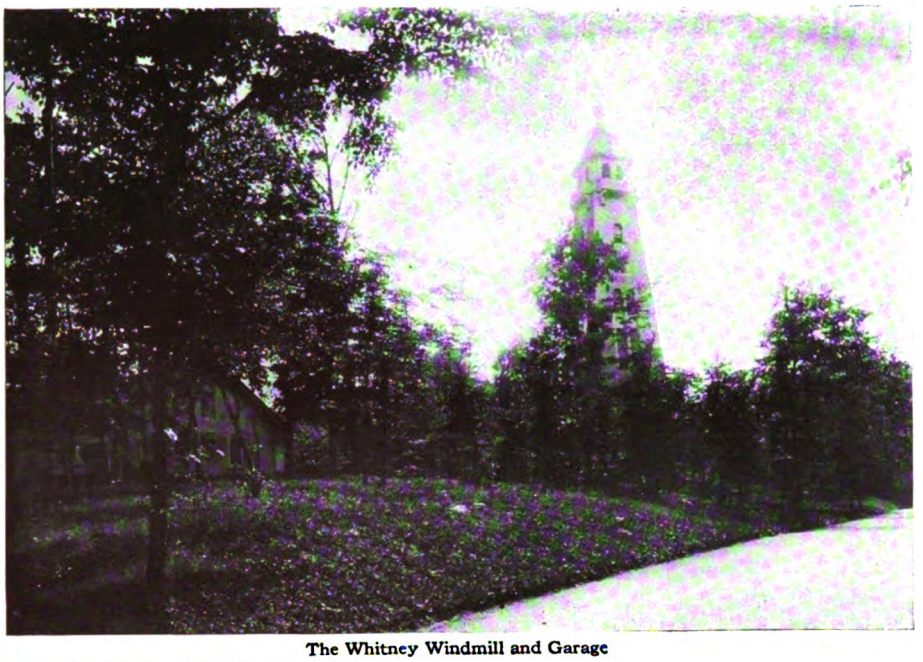

The Whitney Windmill and Garage
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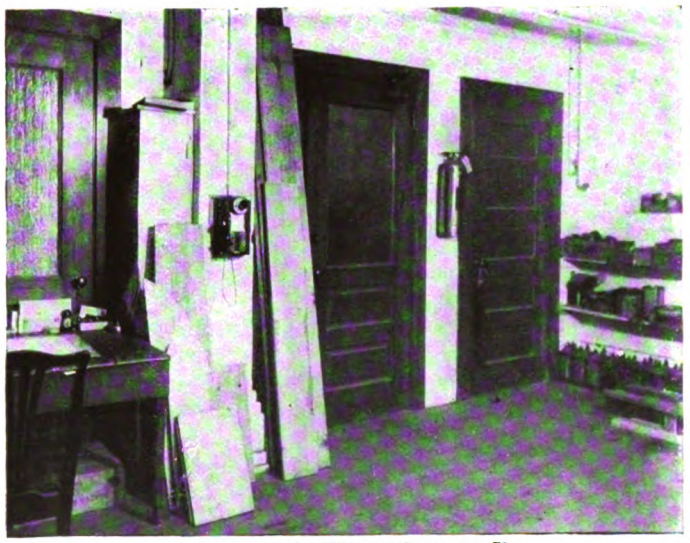
either before or after it on this circuit tries to make a call, it is simply found that the line is dead and the general house line must be resorted to. Under no condition, therefore, can a conversation on the private line be overheard or interrupted. As it is for the exclusive use of the family, the line is arranged so that it can be answered only at stations chiefly used by them. Although an incoming call on this private line signals at the pantry station and service quarters of the house, it is necessary for the call to be answered at the library station, from which it is possible to signal, by means of ringing buttons, to either of the other two stations wired onto this circuit.

The library station is peculiar in that it is without intercommunicating switch (being of the standard desk stand type), and is not equipped with bells. It is so wired, however, that it can be connected either with the house line or the private line, and the absence of bells is explained by the fact that the family do not wish to answer calls not specifically known to be for themselves. All incoming calls for this station are signaled in the pantry, and the servants, after answering the call at the library, announce the call to whomever is wanted.

Incoming calls on the house line are arranged for in a somewhat similar manner, being received at the pantry station, from which all other stations except those on the private line may be signaled. Two switches at the pantry station are used to control the outgoing central office calls from the garage and farm buildings in order that toll usage may be supervised. From a number of stations also, it will be seen in the diagram, no central office connection whatever is provided, as it is supposed that such service will not be required from these stations.

The installation at the farmer's cottage is another peculiar feature. The station here is of the usual desk set type, but is arranged to give intercommunication and long distance service with a minimum installation cost. The cottage is about a mile from the main residence, so the cable installation would have been extremely expensive, a fact which in itself would have made the system unattractive on the score of cost. To avoid this we arranged for the construction of a mile of two and one-half pairs of open wire, thus providing that any station can call the farmer's cottage, but the farmer's cottage can call only the pantry station. From here, however, connection may be made to any of the intercommunicating stations or to the central office line if desired.

The intercom-



Telephone in the Whitney Carpenter Shop
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Corner of Library in the Whitney Residence
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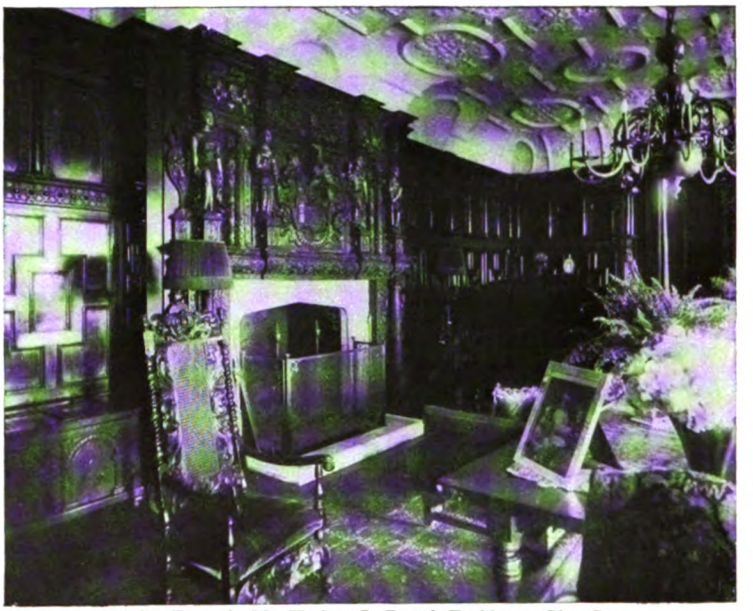
municating set in the stable is not equipped with central office service, as such service would be very much abused if provided. The necessity of toll calls at this location, however, required the installation of a telephone and booth, wholly unconnected with the intercommunicating system. This answers the purpose of the trainer and also of the large number of workers always stationed at the stable.

The telephone equipment at the studio includes the usual intercommunicating set which is wired into the house line, and in addition the individual line and station already mentioned, which are for the exclusive use of the studio. Special features are also noticeable at the tennis court building, where, in addition to the intercommunicating set (equipped with the house line only), there is a private line station in Mr. Whitney's private quarters, similar to the library station in the main residence.

The system seems to provide for every possible contingency and affords every convenience in the use of the telephone. It was installed on an actual cost basis, the approximate figure being five thousand dollars, which included repairs and alterations to the outside cable construction on the estate, in addition to the necessary inside and outside cable installation required for the system.

The intercommunicating system in the residence of Mr. Herbert L. Pratt carries 25 stations, of which 22 are equipped with the usual switching devices and 3 are of the ordinary desk type. There is also an individual line wired into the butler's office for ordinary culinary and kindred uses, and another line in the garage with an extension to the chauffeur's cottage. Perhaps a list of the stations will give the clearest idea of the completeness of the system:

Butler's Pantry
North Corridor, 1st floor
Main Hall, 1st floor
South Corridor, 1st floor
Living Room
Swimming Pool
Boiler Room
Kitchen
Servants' Sitting Room
Main Laundry
Chamber No. 1
South Corridor, 2d floor
Main Hall, 2d floor
Entry No. 2, 2d floor
Diet Kitchen
North Corridor, 2d floor
Main Stairs, 3d floor
Women's Corridor, 3d floor
Men's Corridor, 3d floor
Chamber No. 19
North Stair Hall
Coat Room Garage
Pump House Greenhouse



Living Room in Mr. Herbert L. Pratt's Residence, Glen Cove
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Master's Bedroom in Residence of Mr. H. L. Pratt
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Butler's Pantry in Mr. Pratt's Residence
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Entrance Hall, Mr. Pratt's Residence
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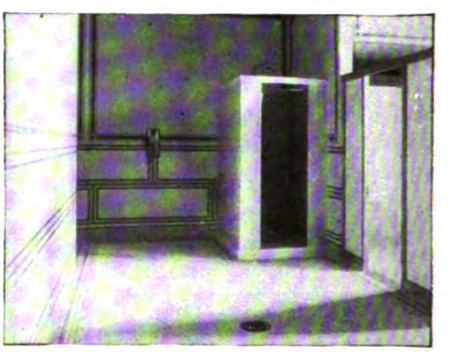

Swimming Pool in the Pratt Residence
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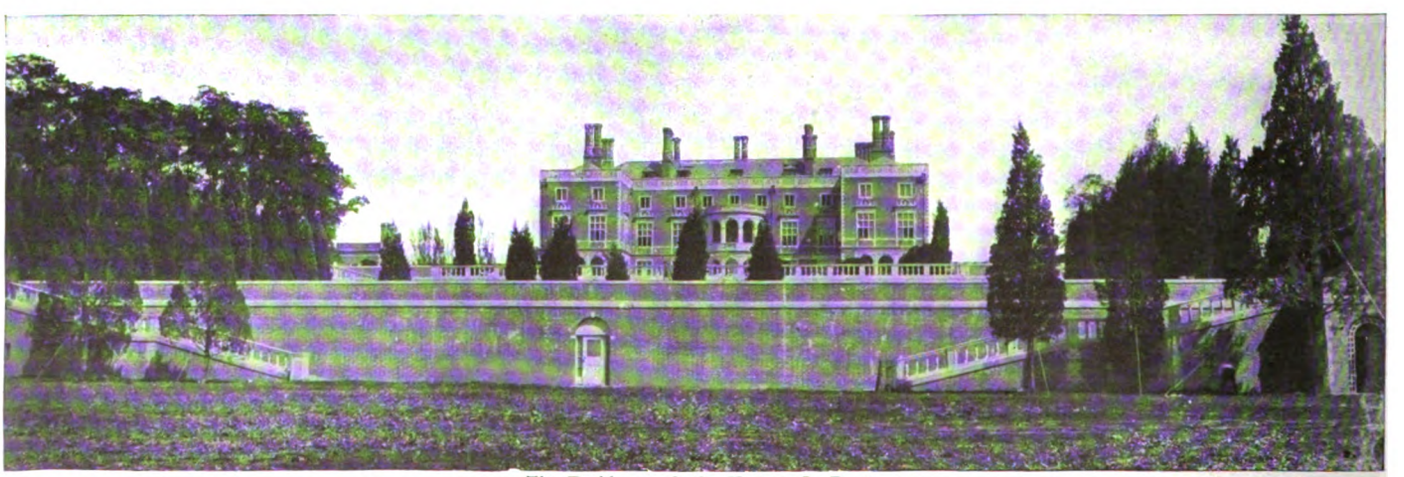

The Residence of Mr. Herbert L. Pratt

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The Residence of Mr. C. A. Coffin, Locust Valley

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Den in Mr. Coffin's Residence

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Bungalow on the Estate of Mr. Coffin

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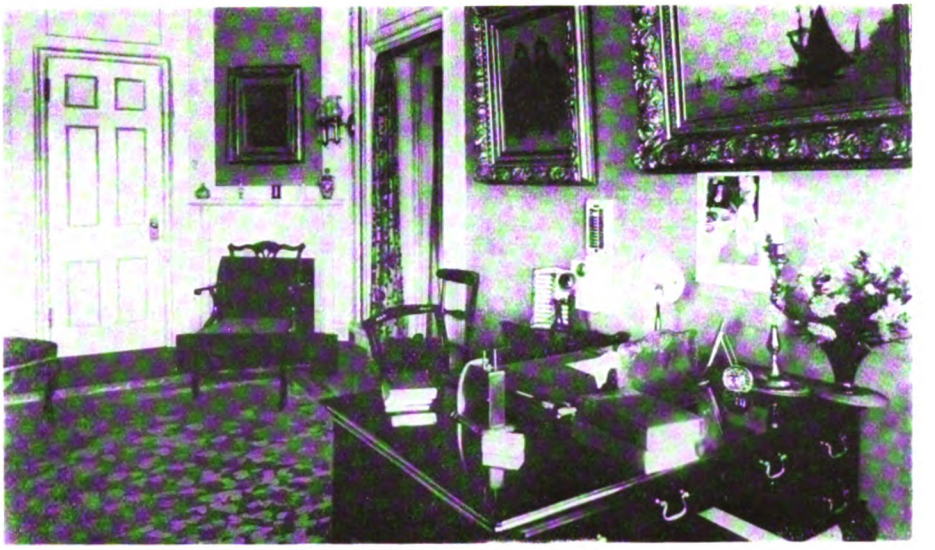
These stations vary in size, the pantry being a 36-button type, the outbuildings 12-button, and all other house stations 24-button, except the coatroom and servants' dining-room, which are flush hotel sets, and the main stair hall instrument, which is of the ordinary desk stand type.

The instrument in the master's chamber is equipped with a cut-out switch, which enables Mr. Pratt to have exclusive use of the central office line. This switch, when operated automatically, cuts into service central office bells at this station, thus providing for night service. The coat-room station is arranged for long distance service only, and is so wired that when the receiver is taken off it automatically disconnects from the central office



Writing Room in Mr. Coffin's Residence

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Mr. Coffin's Stables and Garage

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Residence of Mr. A. W. Hodenpyl, Locust Valley

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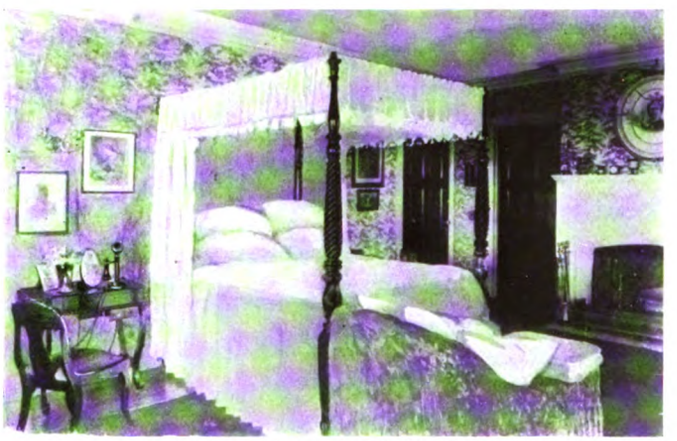

Bedroom in Mr. Hodenpyl's Residence

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Second-floor Hall, Mr. Coffin's Residence

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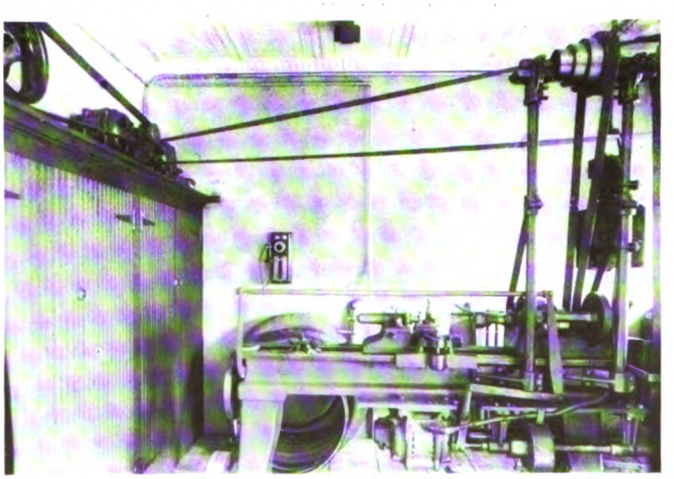

Machine Shop on the Coffin Estate

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line all other stations except that in the master's chamber, which is the controlling station. When the receiver is replaced the line is restored to its normal position. This automatic feature is designed to prevent the inconvenience likely to result from the use of a switch, for guests unfamiliar with the details of this particular system would be likely to neglect to restore a switch to its normal position and thus unconsciously leave practically all of the stations without long distance service.

Most of the stations in the residence are of the flush type and, in order to apply the scheme as much as possible, we arranged to install the long distance bell boxes in wall receptacles with perforated panels, thus adding to the general neat appearance. The instruments are finished to harmonize with the surroundings, most of the sets being done in a dull brass, while others are of nickel, black enamel or other special materials appropriate to the furnishings of the rooms where they are placed. In connection with the interior decoration of the house, with which the telephone instruments are designed to blend, the paneling and mantel in the living-room, which is shown in the illustration, are of particular interest. They were taken originally from Rotherwas House, Hereford, England, the family seat of the Bodenhams, who were one of the oldest families in England, having, in fact, been mentioned in the Doomsday Book, which was compiled at the time of William the Conqueror. The paneling is of walnut, which was very rare at the time this was carved, and the mantel is of oak. The timber was taken from trees grown on the estate and the carving was done by a company of skilled craftsmen at Rotherwas House. The work is considered one of the finest examples of Old English carving to be found in America to-day.

Although consisting of a greater number of stations than the system at Mr. Whitney's estate, the telephone installation at the Pratt residence is less expensive both from the standpoint of installation and of rental, because the grounds are not so extensive, and there are but five outside stations, all within a short distance of the main residence. This of course decreased the construction cost and, the exchange mileage being much less, the annual rental charge was materially affected.

The systems of Mr. Whitney and Mr. Pratt comprise the features typical of the equipment now standard for intercommunicating service. The service for Mr. Charles A. Coffin, Locust Valley, L. I., was installed as early as 1912 and the arrangements are therefore slightly different from those already described. The sets used here have the intercommunicating bells on the face plate of the wall sets and have auxiliary bell boxes for signaling on intercommunicating calls where desk or wall switches are used. In the more modern type of equipment, the intercommunicating bell is concealed in the instrument or switching device. Of course all central office bells conform to our standard for such equipment, separate long distance bell boxes being situated at all points where it is necessary for central office calls to be received.

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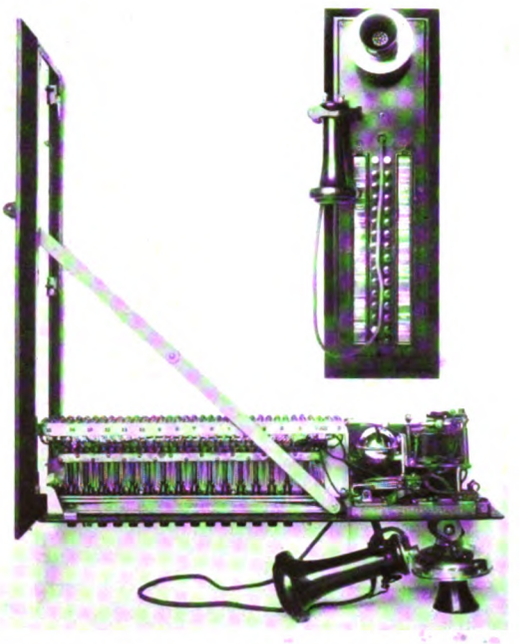
Thirteen stations, all equipped with switching devices, comprise Mr. Coffin's intercommunicating system. Besides the trunk line wired into the system, there is a four party line on Mr. Coffin's estate, the bungalow, farm stable, gardener's residence and superintendent's residence forming the complete circuit. This was arranged because so much cable would have been required to connect these places on a full intercommunicating basis that the expense might have militated against our securing the system, the cost tending to offset efficiency. There is also a second trunk known as the private line, which is wired into the intercommunicating set in Mr. Coffin's den, the line being for his personal use only. The general house line is of course also connected into Mr. Coffin's instrument. There are the usual cut-out switches to insure privacy, but further than this, and the fact that several stations in the system are entirely without central office connection, there are no special features.

In the illustrations of Mr. A. W. Hodenpyl's system, in Locust Valley, another style of instrument will be observed. The system was installed in 1910 and consists of ten stations, five of which are equipped with switching devices and five of the usual type have no intercommunicating switches. This system is provided with various devices to control central office calls from the garage and stables, a number of cut-out switches to insure privacy on the central office line, and also an annunciator drop in connection with the housekeeper's line for general operating purposes.

The more important of our recent systems are those of Mr. W. J. Tully, whose equipment consists of twelve stations; Mr. Mortimer L. Schiff at Oyster Bay, with nine stations; and Mr. H. P. Davison, of the firm of J. P. Morgan & Co., who has twelve stations and provision for several additional connections to be made later. Mr. Davison has not yet completed the erection of his residence, so the service already contracted for involves only the buildings completed at the present time.



Details of an Intercommunicating Set, Showing Instrument in Position, Also Showing Interior Wiring
Copyright, 1915, by New York Telephone Co.

In essentials these intercommunicating systems are like those which we have described, the same flexibility of operation being insured by methods not materially different. Some idea, however, of the growth of the intercommunicating idea, and the success of our service, may be reached from the fact that during the introductory days of this service we secured contracts for only twelve systems in about three years, whereas already during 1915 we have obtained contracts covering the installation of ten intercommunicating systems, aggregating seventy-three stations.

Housekeeper's Office in Mr. Hodenpyl's Residence
Copyright, 1915, by New York Telephone Co.

Mr. Hodenpyl's Den
Copyright, 1915, by New York Telephone Co.

The Telephone Society of New York

Main Society

THE first meeting of the Telephone Society of New York for the season 1915-1916 will be held at the United Engineers' Building, No. 25 West Thirty-ninth street, on Tuesday, October 5. Mr. Theodore N. Vail will make the address.

There will be no meeting in November. Due announcement will be made of a very interesting meeting to be held in December.

Hudson, Central and Western Sections

THE up-State sections are also planning for an unusually interesting season, which will open up to the members wider opportunities for the discussion of matters relating to the telephone business. Special attention will be given to the district meetings, in order that the men at a distance from Albany, Syracuse, Rochester, and Buffalo may nevertheless enjoy the privileges and opportunities of the Society.

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Attainments and Possibilities of the Rural Telephone

"I LOOK forward to the time when farmers generally will call up city and town customers in the morning and by this forehandedness place their produce by ascertaining their customers' wants. Then they will have no surplus left over on their wagons to peddle off at a loss in the heat of the day. Garden and orchard produce could be vended by telephone just as well as not, and at a tremendous salvage in time and energy. . . .

"I don't think the average farmer can guarantee a dozen eggs to his private customer and deliver them every day the year round. Successful egg marketing must be done either through the farmers coöperating or through the medium of high-class commission houses. . . .

"Suppose that in every town and city there was a place to which farmers could telephone and get current prices for products of the farm. Then the exact condition of the market would be known to the farmer before he started from his farm. He would have a chance to decide whether it would pay him to move his products to market. If there were a chain of these centers the farmer could by telephone get a choice of markets.

"Coöperation of farmers ought to lead to the establishment of such centers . . . for there is room for much improvement in the distribution of farm products. The locating of the demand before leaving the farm would go a long way toward eliminating huge waste of provisions, and would at the same time materially cheapen farm products on the whole to consumers."

These remarks of Mr. Vail appeared in an interview published over a year ago. And to-day they are coming true more completely with the rising of every sun.

The farmer of to-day no longer drives his wagonload to town to take what the merchant will give him—the merchant knowing full well that potatoes and corn and beans will not journey back to the farm that night, and that a drive in the heat of the day to the next market would lessen their value. The up-to-date, businesslike farmer steps to his telephone before he leaves his farm, and talks with all the best dealers in the village or in the nearest large city, where he can learn the exact condition of the market. He can sell his produce in this way, and all that remains to be done is the delivery of the goods. The farmer who makes no previous arrangement but carries his produce to "town" to be sold when he gets there, faces the disadvantage of ignorance of market prices and the consequent risk of being "done."

It is not only in the marketing of produce that the telephone enlarges the efficiency and furthers the development of the farmer. By promoting intercourse among the people widely separated as they are in the farming districts the telephone is fast overcoming the isolation and loneliness of country life. Lack of companionship has been a real factor in preventing the fullest realization of the opportunities in agricultural work, and this the telephone is rapidly conquering. Hand in hand with this drawing together of farm communities wrought by the telephone, is the emergency value of rapid communication, and the practical method of accomplishing things with expedition and dispatch, which the great distances in the country had formerly made impossible of quick settlement. Grange organizations, and numberless means of coöperation between the farmers have been facilitated in this way.

Trade reports of the current year from Ireland state that the British postmaster-general is taking measures to increase the use of the rural telephone there. A special rate has been made by which service on a line not over a mile in length may be enjoyed for $14.60 a year, provided there are not less than three parties on the line. This rate, of course, includes only local service. Subscribers not nearer than two in a mile may have service for $17.03 provided there are at least three subscribers. The plan is being forwarded in the hope of "ameliorating rural conditions in Ireland and of augmenting comfort and industrial efficiency." It is stated in this connection that "In the United States there are to-day more telephones in use by farmers than the whole number in use by the commercial and all other classes in the United Kingdom, and these telephones are found to add to the profits and comfort of the farmers to an extent which makes the cost of the telephones seem negligible." It is to be regretted that the Irish farmers, being at the mercy of a government-owned telephone system, cannot have the complete telephone service which is doing so much for the American farmer. The extreme radius of the Irish farmer's telephone toll call is one hundred miles, while the farmer in the United States can talk anywhere.

The recent experience of the Kansas farmers, which is the newest and on a large scale the most important triumph of the rural telephone, emphasizes the truth and some of the possibilities of Mr. Vail's ideals for farmers' telephones perhaps better than any other one instance. The trouble here was not to market the product but to harvest it. First came floods throughout large sections of central and eastern Kansas. It is estimated that the rural telephone was the means of saving over $5,000,000 worth of farm property, for the central office operators were informed of the high water, and they quickly warned all the farmers on their lines of the approaching danger.

A few weeks after this, one of the biggest wheat crops in the history of Kansas was ready to harvest and 48,800 harvest hands were needed. The situation had to be handled so that there would not be a scarcity of men in one place and an oversupply in a neighboring community, and the State free employment bureau was somewhat puzzled as to just how to distribute the great army of extra farm hands for whom the call had gone out. The rural telephone proved to be the solution.

The telephone managers of the various rural lines and mutual local companies were called to the rescue by the farmers, and every morning the manager would call every farmer on his line and get a report of how many extra hands were needed there that day. Then the managers would confer (over the telephone) and make up lists of what farmers needed extra farm hands and how many they needed. These lists were telephoned to the State employment bureau in Topeka, where by ten o'clock each day reports were received from agents of the bureau in the various railroad centers where the men congregated on entering the State. By means of the lists sent in each day by the telephone managers, the bureau could quickly tell its agents where to send the men, how many were wanted, and the name of the telephone manager to whom they should report. When the men reached the telephone manager he gave them cards to the various farmers on his line who had asked for help.

It has been estimated that as many as 20,000 harvest hands were distributed by the State free employment bureau, direct to the farmers, wholly through the agency of the rural telephone. What this must mean in the harvesting of a record wheat crop it is impossible to estimate. Certainly the success of this, the first year of the plan, promises a bright future. Perhaps it will lead to a wider application of the method, and one of the greatest economic problems of this age of economic questioning will find its solution in the telephone. For there is always work to do, if only the work and those who want it could be brought together. For the Kansas farmer, at least, the telephone has solved the problem.

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Telephones a Deterrent to Crime in Nassau County

County-wide System Devised by C. A. Ryder, Local Commercial Manager, Freeport

CONSIDERABLE attention was paid by the Long Island newspapers and the New York dailies to a meeting in Mineola, which was held on January 16, 1915, and which was described in the *Nassau Post* of January 21 as follows:

Country Police System Devised by Telephone Manager Ryder

On January 16, 1915, at the invitation of Sheriff Pettit and District Attorney Smith, the Justice of the Peace, police justices, constables, policemen, special officers, Deputy Sheriffs and village presidents from the various towns in the county assembled in the room of the Board of Supervisors at Mineola, for the purpose of discussing and devising a better means toward the detention of criminals and the deterring of crime in the County of Nassau.

Charles A. Ryder, Local Commercial Manager of the New York Telephone Company, was present, and outlined a system of telephone communication between the principal villages of the county and the jail, as a central office.

Mr. Ryder discussed at length his project, stating that by this system communication could be had at once with the points along any one certain route, or that the officer at the switchboard in the jail could, by making the proper connections, communicate with all points over all the various routes throughout the county by one message; thereby giving information to all peace officers throughout the county that a crime had been committed; that the criminal had departed from the point where the crime was committed in a certain direction or toward other points of telephone communication.

The criminal element of the large cities contiguous to the County of Nassau would immediately learn of the police protection thus afforded and seek other fields for their unlawful endeavor.

The system was unanimously approved by the officers present and a resolution was drawn and generally signed, requesting the Board of Supervisors to consider the proposition and provide ways and means of installing this or some other adequate system.

On April 16 the county board of supervisors approved a contract with the New York Telephone Company for a system, which subsequent experience has shown meets every requirement.

Accompanying this article is a map of Nassau County, showing the extent of this telephone service, and also a diagram, showing the lines and assignments. These two illustrations show how thoroughly Nassau County is protected by its police telephone system and the means by which this is done. Every gateway of the county is guarded at one or more points, and it is possible for a telephone message to be sent from any point on the system, which will instantly put a cordon around the county and start the police at every strategic point within its limits for any duty which may require their services. The method by which this is accomplished will be seen by the following directory used by the Nassau County officials in calling over this system:

For local police assistance, the public calls the local central office numbers as indicated below. The police of each town are always in immediate connection with the Sheriff's office and all of his representatives through the private switchboard in the Mineola Jail.

One long ring (10 seconds) is a general call for every station on your circuit and every station should answer.

To call any station on your own circuit, various rings as indicated below.

To call any station on any other circuit of the system, give one short ring, which calls the private switchboard in the Sheriff's office, through which any station can talk to any station on other circuits.

New York City Police Booths

Springfield	1911	Merrick Rd. & Springfield avenue.
Springfield	1803	Fosters Meadow road and Atlantic avenue.
Springfield	1927	Farmers and Central avenue.
Hollis	6274	Jamaica and Hempstead avenues, Queens.
Hollis	6441	Hillside and Bushwick avenues, Jamaica.
Hollis	6122	Black Stump and Rocky Hill road, Jamaica.
Bayside	2541	Broadway and Bell avenue, Bayside.
Bayside	2918	Broadway and Main avenue.

Circuit "A"

	Rings	Public Calls
Port Washington Constable Smith	2 short	168-R Port Wash.
Manhasset Constable Allen	3 short	444 Manhasset
Great Neck Constable Hynes	4 short	49-M Great Neck
Lakeville Red Lion Inn	5 short	207 Great Neck
Mineola Krug's Hotel	1 long	1075 Garden City during day.
	1 short	818 Garden City 6 P.M. to 6 A.M.

Circuit "B"

Glen Cove Officer McCahill	2 short	829 Glen Cove
Glen Cove Murray, Motor Police	3 short	769-J Glen Cove
Locust Valley Dep. Sheriff Davis,	4 short	440-J Glen Cove
Oyster Bay Constable Thompson	1 long 1 short	295 Oyster Bay
Sea Cliff Officer Wittenberg	1 long 2 short	767 Glen Cove
East Norwich Rothman's Hotel	1 long 3 short	266 Oyster Bay
Roslyn Magic, Motor Police	2 long 1 short	184-R Roslyn

Circuit "C"

Farmingdale Justice Welden	2 short	105 Farmingdale
Westbury Fire House	3 short	180 Westbury
Jericho Hicks & Remsen	4 short	69 Hicksville
Hicksville Court House	5 short	201-J Hicksville

Circuit "D"

	Rings	Public Calls
Garden City Police Headquarters	2 short	1055 Garden City
New Hyde Park Bauman	3 short	71-R Floral Park
Floral Park Natiello, Village Officer	4 short	
Elmont Hoffner's Garage	1 long 1 short	76 Floral Park
Franklin Square Kalb, Deputy Sheriff	1 long 2 short	69 Floral Park

Circuit "E"

Lynbrook Flagman's Shanty L.I.R.R. & Atlantic avenue	2 short	916 Lynbrook
Hempstead Traction Company's Office	3 short	26 Hempstead
Rockville Centre Police Headquarters	4 short	300 Rock. Ctre.
Long Beach Police Headquarters	1 long 1 short	224 Long Beach
Valley Stream H. S. Combs, Deputy Sheriff	1 long 2 short	481-w Val. Stream
Lawrence Police Headquarters	1 long 3 short	75 Far Rockaway
Cedarhurst Police Station	2 long 1 short	1731 Far Rock.
Woodmere Police station	2 long 2 short	3128 Woodmere
East Rockaway C. M. Strong, Deputy Sheriff	2 long 3 short	1162 Lynbrook
Oceanside R. H. Smith, Deputy Sheriff	3 long 1 short	498 Rock. Ctre.

Circuit "F"

Freeport Police Headquarters	2 short	700 Freeport
Freeport Bertram Hope, Motor Police	3 short	320-R Freeport
Baldwin Otto D. Payne, Motor Police	4 short	346-W Freeport
Massapequa Geo. Pennell, Jr., Deputy Sheriff	1 long 1 short	64 Massapequa
Wantagh Cox, Wendler & Van Tuyl	1 long 2 short	66 Wantagh
Bellmore J. J. Molloy, Deputy Sheriff	1 long 3 short	242-M Wantagh
Seaford Constable Miller	2 long 1 short	127 Wantagh

Now refer to the map, the diagram of assignments, and the directory, and suppose that a party of joy-riders headed for New York is burning the gravel as it flies into Jericho. By calling telephone number 69, Hicksville, a citizen can notify the Deputy Sheriff in the Jericho District. This telephone is a part of the Company's regular central office system. But, in the meantime, the speeders would be miles away, so the Deputy Sheriff at Hicksville takes his other telephone, which is connected with the Sheriff's system, and gives one long ring, which establishes connection with the Sheriff's office in Mineola. The Sheriff's office then gives one long ring

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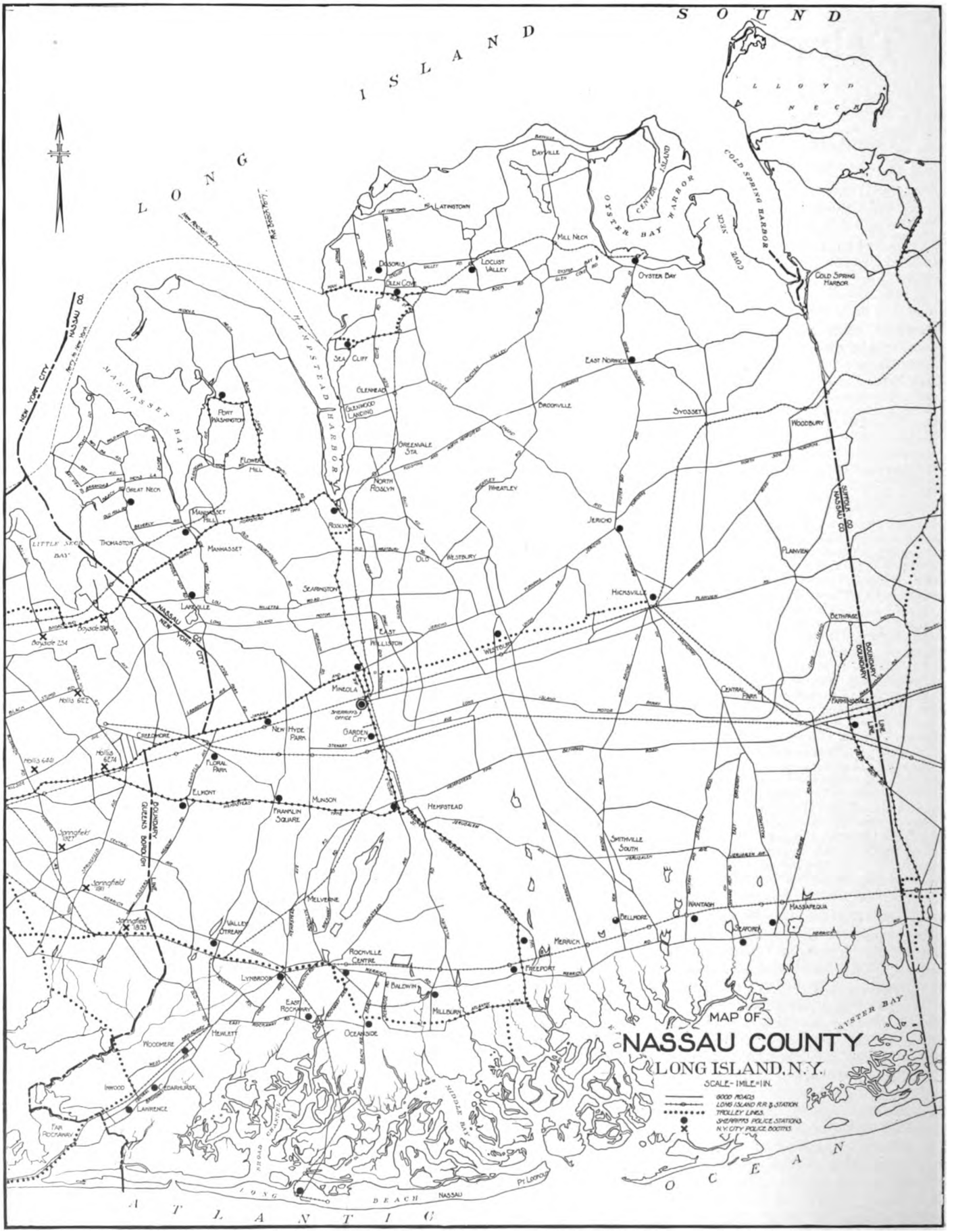

Map of Nassau County, L. I.

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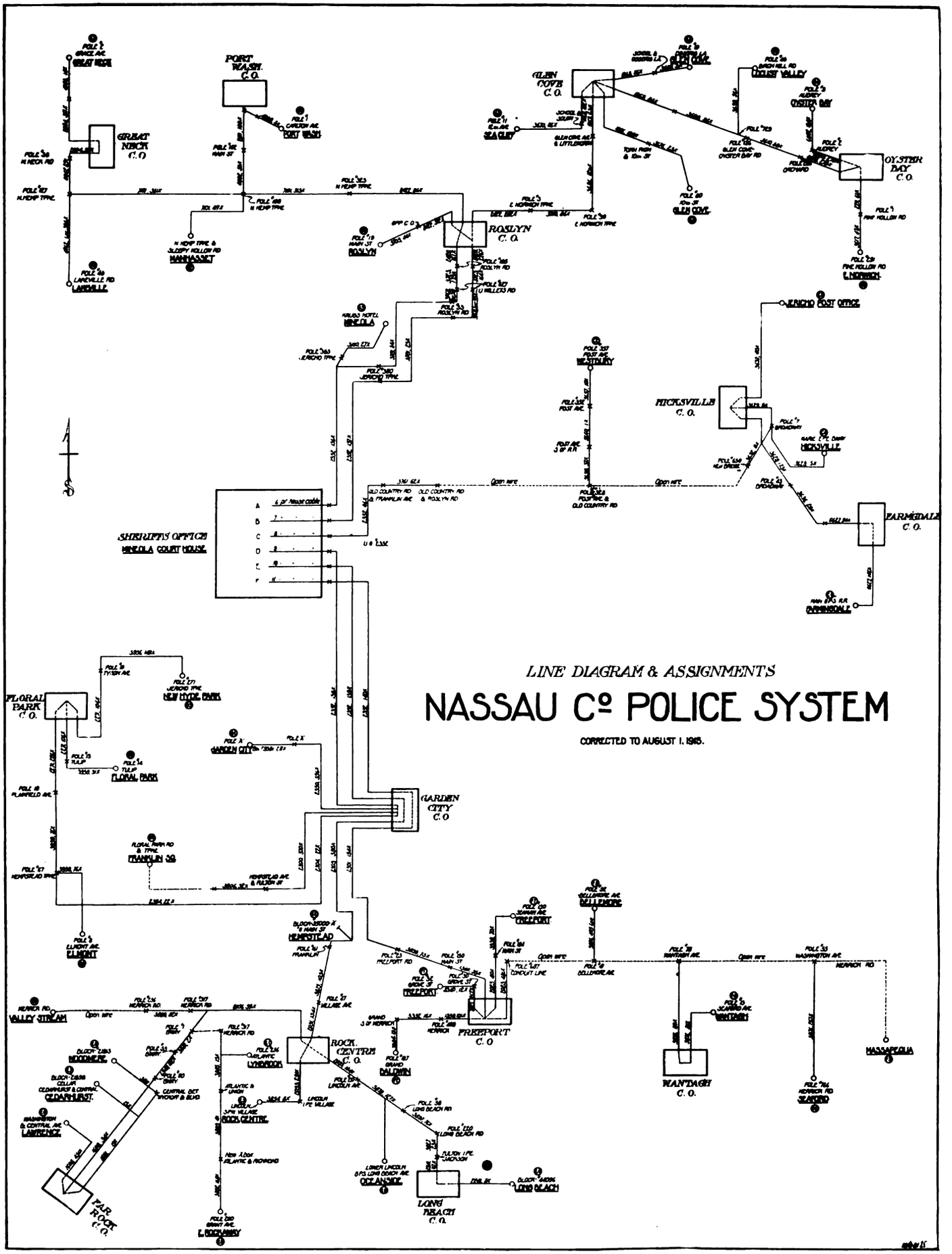

Nassau County Police System

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for circuits B, C, and F, which brings in all the towns on these three circuits. Any road the speeders take must pass through one of these towns. Thus it will be seen that the roads in every direction are fully guarded.

But suppose that on a dark and stormy night a burglary has been committed, say at Great Neck, and the robbers have made a clean get-away. One short ring will notify the switchboard in the Sheriff's office at Mineola, and with one long ring on each of the seven circuits terminating in that switchboard every town listed in the above directory will be notified and brought into communication, and a warning given to look out for the thieves. Look at your map again and it will be seen that escape is impossible, and the only safety lies in concealment. But here again lurks trouble for the rascals, because from every direction the police will begin to converge upon Great Neck with the certainty that the net is closing, and somewhere they will bag their quarry.

For anything that may happen requiring the attention of the police, whether it be a search for a lost child or a strayed animal, an accident, or a crime, the Sheriff's system in Nassau County, which is auxiliary to the central office service of the New York Telephone Company, provides the maximum of police protection at a minimum of expense.

The police of any town in Nassau County may talk over the Sheriff's line to any other town in Nassau County without toll charges. Any resident within the limits of Nassau County who knows of or sees a crime committed may call the police through the regular central office system, and the entire police force of Nassau County, or such part of it as may be necessary, can be called in immediately. This embraces the police forces, constabulary, Sheriffs and Deputy Sheriffs, and all other guardians of the peace within the county.

Nassau County had long felt the need of effective coöperation among its towns, especially for police purposes. Along its entire western boundary the county adjoins the city of New York. The county is growing rapidly in population, its towns in many cases adjoining each other, and fast becoming one big city, though still under separate village or town government. Nassau County was formed in 1899, and is that portion of the former Queens County which was not included in Greater New York. At that time the population of the present Nassau County was 55,448 with a telephone development of 821. The population now is 117,258 with a telephone development of 13,828.

The Telephone First Aid to Troubled Conscience

By Augusta V. Seymour, Advertising Department

CHILDREN can teach grown-ups some very good lessons sometimes. When their mothers are telling them something for their own good they often appear far from attentive, yet long afterward, when it is least expected, they show how thoroughly they have absorbed it and put it into practice.

Not long ago a certain mother had occasion to have a very serious talk with her little son who had done something quite wrong to a little playmate. She showed the little fellow how much better he would feel if he apologized to his friend. His conscience would be free and everything would then be very much pleasanter. The child followed his mother's suggestion, and every night after that his mother would sit at the foot of his little white cot and together they would review the day's happenings. She would ask him if anything had gone wrong between him and his playmates, and he would tell her about his difficulties. Then she would put out the light and leave him at peace with the whole world.

One day when he went to visit his little cousin the two boys had some misunderstanding and a terrible "row" resulted. Finally the guest left in a high state of anger.

On the way home on the trolley the truth began to dawn upon him and he saw he was the one to blame for the whole affair. Then his conscience began to give him such discomfort as he had never known. He longed to go back to his cousin and settle matters, but he hadn't the carfare. What could he do? He thought and thought, but the problem seemed to be too hard for him to solve. Then like a stream of sunlight a thought came to him. He could hardly wait for the car to reach his corner, and when it did he dashed off down the street, his whole being intent on one thought.

Hardly had the door of his home closed behind him when he was at the telephone, unburdening his heavy heart to his cousin.

The damages of the morning being thus repaired, the little fellow caught up his bat and started on the run for a playmate's home. And such a dandy game of ball he had never had in all his life before! But it was the little confidence talk with his mother that night from which he anticipated the greatest pleasure of the day.

When that hour came he told the story of the quarrel, skillfully withholding the final outcome.

"Well, dear," said his mother, sorrowfully, "then there is no use asking if anything has gone wrong to-day. You don't know how it grieves me that to-night you have to go to sleep without a clear conscience." Now the moment had come, and bubbling over with joy, the child poured out the story of how the telephone had helped him out of his difficulty, enabling him to make things right with his cousin and go to bed with a clear conscience.

The child was smothered in kisses and a happier mother there was not to be found. "Oh, Donnie," she cried over and over again, "wasn't it lovely to have the telephone!"

Telephone Number as Mail Address

YOU never can be lost as long as you have a telephone. A citizen of Oneonta, N. Y., would have been buried in the oblivion of somebody's forgetfulness if he hadn't been a telephone subscriber. Mr. H. W. Fluhrer, General Manager of the Otsego and Delaware Telephone Company, sends us the documentary evidence of this truth. It is an envelope addressed, "Phone 509J, Oneonta, N. Y.," and up in the right-hand corner is this touching appeal, "Will postmaster kindly look up phone number?" Upon the arrival of this curiously addressed letter the postmaster called up the telephone office to inquire the address of telephone 509J, and in this way the sender's faith in the telephone was justified. After the letter was delivered the envelope was obtained from the recipient, and it developed that the writer of the letter had forgotten the name of the person he wished to address, but remembered the telephone number. And that proved to be all that was necessary.

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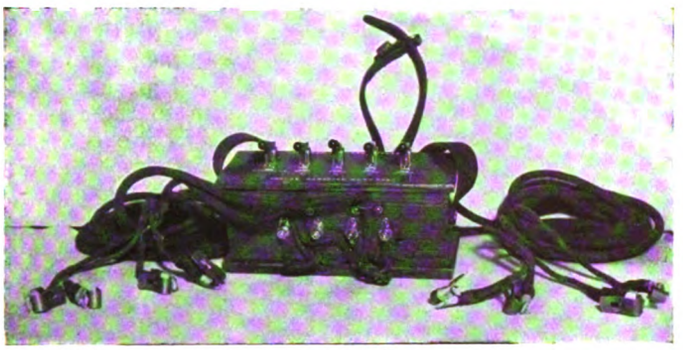
Transposition Work in the New Jersey Division

By L. W. Lamb, Engineer, New Jersey Division

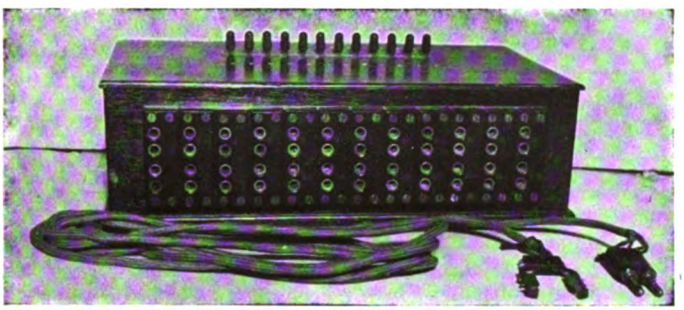
As a result of the storm of March 1, 1914, practically all the open wire trunk lines in the New Jersey division had to be retransposed, and in order to accomplish this transposition work with the least possible interference with traffic (all the wires were working), special apparatus had to be designed.

The Division Equipment Engineer's force designed the apparatus which the Traffic Department testify is proving extremely satisfactory, since they have had no occasion to complain of interference with working trunks by transposition gangs.

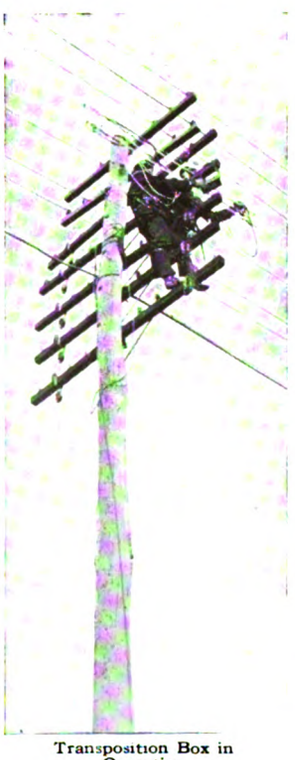
The apparatus consists of a transposition box, used by the lineman on the pole at which the transposition is being cut in, and a switching box, used at the central office and operated either by the deskman or by some person designated to operate the switching box only. The transposition box is so designed that the lineman when about to cut in a phantom transposition first places the clips, shown in the first illustration, on the wires to be transposed and throws up the key marked "straight"; then he places his grips on the wires in such a manner as to make the proper phantom transposition and cuts the wires, the circuits working through the transposition box.



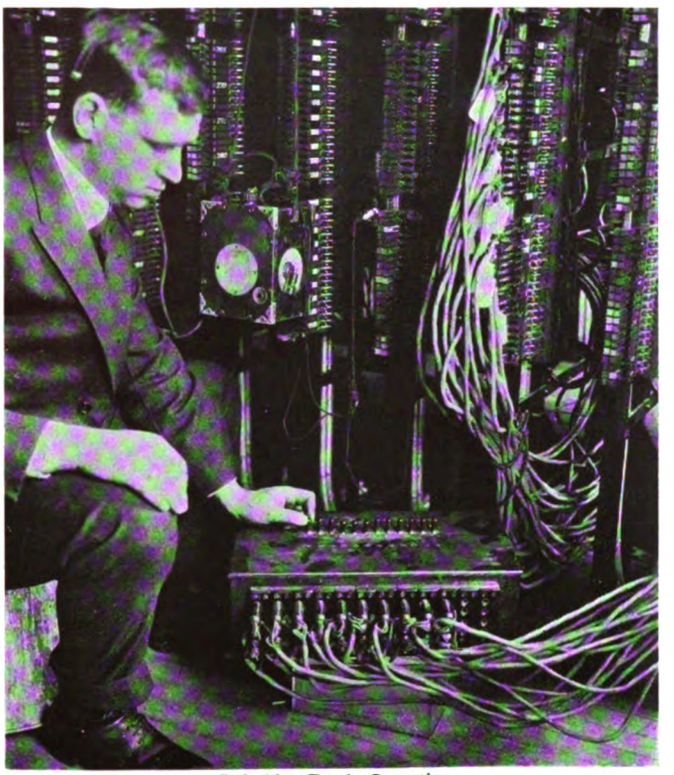
Transposition Box



Switching Box



Transposition Box in Operation



Switching Box in Operation

The phantoms on the line are numbered according to the pin positions they occupy; for instance, the phantom on pins 1, 2, 3, and 4 is numbered 1; on pins 7, 8, 9, and 10 is numbered 2, etc. The vertical phantoms on pins 5 and 6, 15 and 16, 25 and 26, 35 and 36, etc., are numbered 17, 18, 19, and 20, respectively.

The switching box shown in the second illustration has a number of similar keys, wired exactly the same, numbered consecutively, corresponding to the number of phantom circuits on the line being transposed, the operation of which is merely to reverse the two side circuits as the phantom transposition is cut in by the lineman with the transposition box.

Before the use of the transposition box and switching box in making phantom transpositions was adopted, the Traffic Department was continually finding trouble on trunks caused by the transposition gangs, but since this apparatus was adopted, we have been able to transpose the busiest trunk line without interfering in the least with the traffic.

Stock Purchase Data

So many requests have been received for additional copies of the September issue of The Telephone Review, or for copies of the page of "Data on Purchase of A. T. & T. Co. Stock," which appeared in that number, that we are reprinting the page as an insert with this issue, for the benefit of the many who wish to file the stock purchase data without destroying their copies of the magazine. Additional copies of the insert may be secured upon request.

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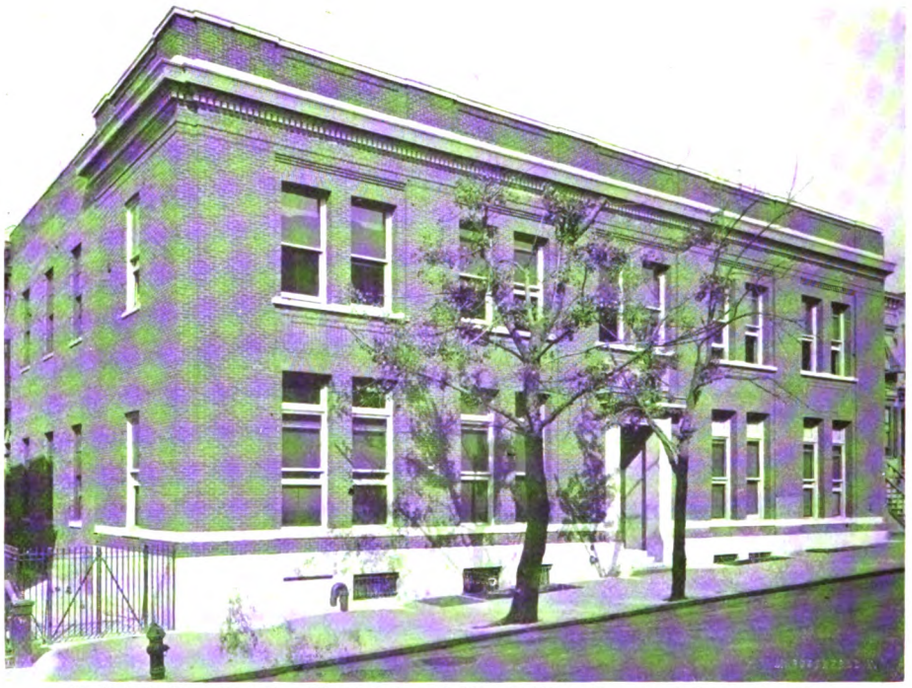
Cut-over of the New South Exchange, Brooklyn

By M. Greene, District Inspector, Brooklyn

WITH the opening of the new South central office on Saturday, September 11, 1915, Long Island experienced the fifth successful common battery cut-over within a period of eleven months. Of these, South was by far the largest, about 4,600 lines and 6,700 stations being involved.



N. Y. Telephone Co.'s New "South" Central Office Building, Fourteenth Street, Brooklyn

The new Western Electric No. 1 type switchboard, consisting of twelve "A" and nine "B" sections, is located on the second floor of the new building on Fourteenth street, Brooklyn, two blocks from the old office. The terminal room is on the ground floor, with charging machines and storage battery in the basement. The wire chief's testing equipment consists of one section of the two-section A. T. & T. No. 12 type desk which was originally built for Midwood, but which was found to be more than was necessary for the requirements of that office.

An interesting feature of the new office is the arrangement of the main frame which, contrary to the usual custom, is built with the vertical side toward the windows. As most of the work on "B" type frames is done on the vertical side, it is expected that this arrangement will prove more advantageous as regards natural light and accessibility.

In connection with the cut-over the trunk situation presented a problem of some complexity. The layout in the new office was practically a duplication of that in the old, and as the amount of traffic required that 70 per cent. of the trunks be kept in service up to the time of the cut-over, it was necessary to devise some method of making a quick transfer. The outgoing trunks were, of course, bridged into the new office without difficulty. In the case of the incoming trunks it was found by experiment that no trouble would result from bridging the old and new offices together, providing the two storage batteries were kept at approximately the same voltage. After the trunks were tested out in the new office, therefore, the pins were all removed from the protector heads and left out until about two hours before the cut-over. By keeping the old battery charged to just the proper point no trouble resulted when the trunks were closed through. At the time of the cut-over subscriber lines, trunks and

New "South" Western Electric Switchboard Consisting of 12 "A" and 9 "B" Sections

Portion of Operators' Sitting Room in New "South," Brooklyn

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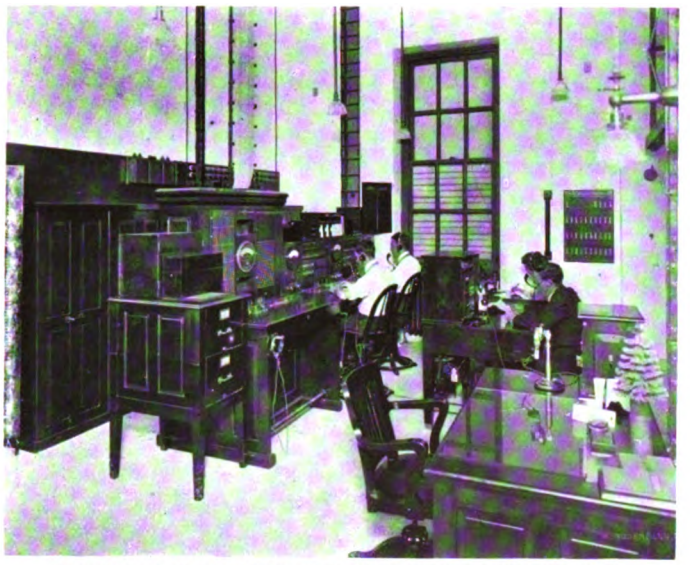
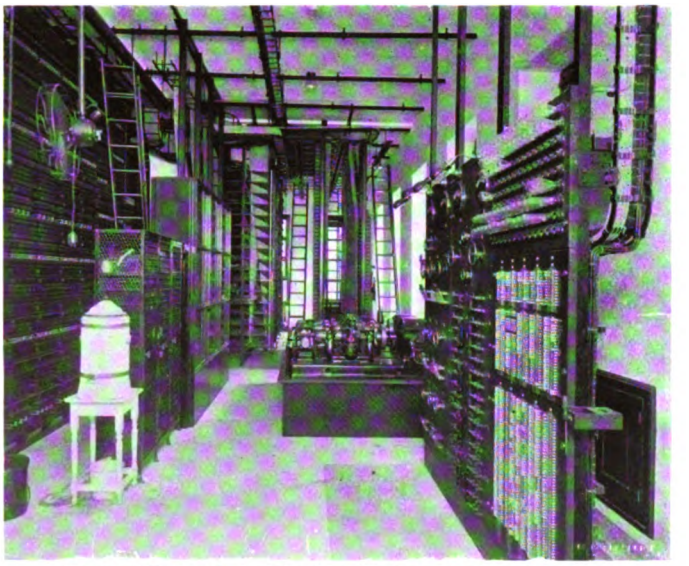


New A. T. & T. No. 12 Type Wire Chief's Desk in New "South"



Terminal Room, Embodying New Features, Described in Text

call circuits were all transferred by the same operation.

In order to remove the heat coils from the old main frame it was necessary to build a rack along its entire length. There were thirty-five protector heads involved and the rack was divided into sections covering seven heads each. Three men were stationed at each section, making a total of fifteen men for the entire frame. Switchboard Wiring Foreman T. E. Walker was in charge, and the fact that the heat coils were removed quickly and without difficulty gives evidence of the efficient manner in which this very important phase of the cut-over was planned and so successfully carried out.

In addition to the lines of the old South exchange, there were about 500 lines bearing a South designation which were working through the Hamilton central office. These represented the overflow which the old South switchboard could not accommodate, and they were cut over at the same time.

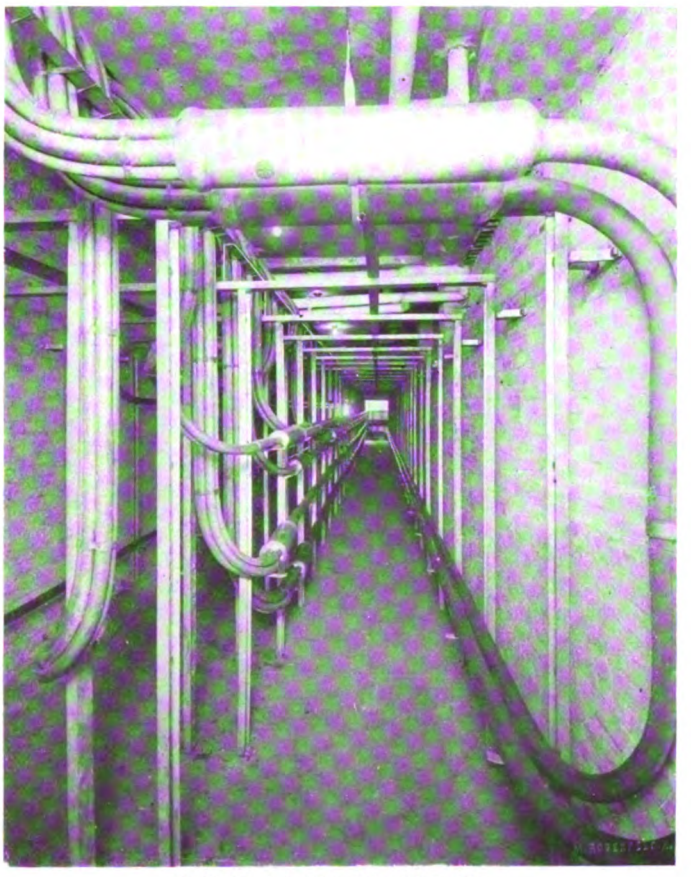
The old South office on Fourteenth street was cut into service on June 14, 1902. Miss Irene Tompkins, the present chief operator of Suburban Long Island, was chief operator of South at that time, and Mr. F. W. White, now division equipment engineer, Long Island, was wire chief. It was thought appropriate, therefore, that these two employees should take part in the opening of the new office, and arrangements were made accordingly.

It was 11 P.M. before business dropped to such an extent that the cut-over could be made with the minimum risk of interruption to service. At that time there were fourteen connections up in old South and on South lines in Hamilton. At 11.06 these were all duplicated in the new office and Miss Tompkins passed the word to Mr. White to proceed. At 11.07 heat coils were reported out at Hamilton and South and fifteen seconds later the sleeving was pulled from the new relays and the throw completed. Not one of the fourteen connections which had been duplicated was cut off.

A total of fourteen permanent signals appeared immediately after the cut-over. These were partly due to pieces of wire and solder, etc., which were shaken loose in the old frame, and partly to miscellaneous causes. Two of them were caused by coins in prepayment public telephones which operators in South were apparently about to collect when the cut was made.

The operating force, by the way in which they handled the new board, demonstrated how thoroughly they had been prepared by their chief operator, Miss Sarah Bosman. They showed their appreciation of Miss Bosman's good management by presenting her with a handsome black traveling bag, accompanied by a note expressing best wishes for her success in the new office.

The Construction Department, under the supervision of Foreman Rhinehart, did its usual good job on the main frame. Wire Chief Merson and his force worked day and night to insure the success of every detail of the operation, and they deserve great credit for a remarkably smooth cut-over. Congratulations are also due Foreman Mitchell of the Western Electric Company for the first-class condition in which the equipment was turned over.



Cable Vault in New "South" Building

Where would we be without the telephone? Where? Back in the woods with the gophers—down in the cellars with the bats—up in the belfries with the owls—outside of civilization and behind all creation. Hustle in your order for a telephone. Live while you live; you'll be a long time dead.—*Ilion, N. Y., Citizen.*

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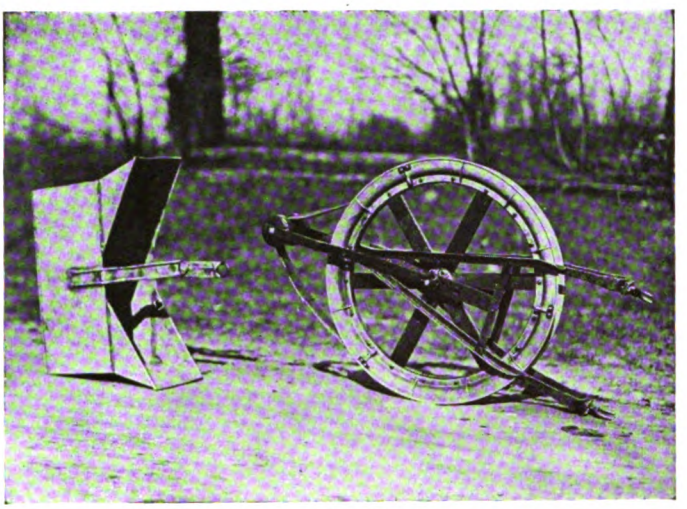
Self-oiling Aerial Cable Pulling Wheel

By W. M. Van Deusen



Self-oiling Cable Wheel with Bucket Detached

Self-oiling Cable Wheel in Use

THE accompanying illustrations show a new device for use in pulling heavy aerial cables, which has been developed in the Long Island Plant Department.

It consists of an aluminum wheel twenty-six inches in diameter for feeding the cable into the rings; a two-inch canvas belt runs over this wheel and around a small wheel fastened to the framework under the large wheel. A galvanized sheet steel bucket carrying light floor oil is suspended from the framework; the small lower wheel is submerged in this oil, and the belt running over both wheels amply lubricates the cable.

The pulling strain is considerably lessened by the large diameter of the wheel, and there is no possibility of flattening or kinking the cable. Cable can be pulled through the wheel in either direction, and with proper pre-arrangement of work on long toll cable jobs, for each single set up of the wheel, two reels of cable can be pulled in, one from each side. Ordinarily one and sometimes two men are assigned to lubricate cable as it is drawn in; this labor is saved by the self-oiling device. The surplus oil which usually drips off heavily at the first aerial ring or at booster ring, is caught in an ordinary small tin pail suspended at this point, and at the end of each pull is poured back into the large bucket. The wheel with bucket complete weighs fifty-eight pounds.

[The above article was written several months ago. We learn that some of these wheels are now in use in different divisions of the Company. We would be glad to receive contributions of criticisms or suggestions tending to improve the self-oiling cable wheel.—EDITOR.]

Reflections

By R. S. Sutliffe, A. T. & T. Co.

WHAT would the movies be without the telephone? How many picture dramas have you seen where the telephone has not played an important part? How many times has that most useful of modern utilities been the means of releasing the imprisoned hero, of summoning the police to save the isolated mother and children, of proposing marriage to the willing damsel, and even saving the unjustly convicted young man from being executed. The movie without the telephone might be possible, but it would lose a lot of its most thrilling situations. And those situations are but reproductions of life as it is daily somewhere or other on this planet of ours where "all the world's a stage."

Those of us who are old enough to recollect the early eighties will remember the dismal contemporaneous pictures labeled "The parting lovers." The unfortunate ones were always shown locked in a desperate embrace and with expressions of hopelessness on their faces. Life apparently was not worth living in the awful interim until the next session. And in the country, because of distance, obstacles no doubt cropped up during these periods of separation and isolation which at times upset the whole train of events.

Contrast this woeful picture with that of the 1915 young man saying good-by to his fair one. No despair there. No lingering struggle in breaking away. He bids her a hearty twentieth-century good-by, and as he goes out into the darkness to his trolley, his auto, or his shank's mare, he shouts back, "*I'll telephone you in the morning.*"

Who, at some time in his life, has not been apparently hopelessly at issue with another, when the suggestion was made "Let's talk it over"? And the seemingly impenetrable clouds were cleared away by that talk and the sunshine of reason let into the situation.

Kaiser Wilhelm, President Poincaré, King George, the Czar, and the others are a pretty sane lot of fellows. Not one of them ever desired the horrible conditions—physical, moral and financial—that the war has developed. Suppose each had had at his call the long distance service of the Bell System, and each had enjoyed a long distance talk with the other, instead of permitting a lot of political go-betweens to take up golden hours and days in writing endless diplomatic and political documents, and affording the professional scrappers of each country opportunity to dare each other to begin the row. Might not this most horrible conflict of history have been avoided? Who can say "No"?

The pen is mightier than the sword, but the sword is now almost obsolete, and the long distance conversation is required for the big gun.

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LAMPS AND KEYS

By Dorothy Thorne

"Can You Outdistance the Telephone?"

MISS O'CONNOR, of the Orange central office, is getting ahead of the rest of you, girls. This month she sends you something again—this time a story of her own. It is a good live story with lots of pep. Probably the Commercial girls will dive for their memorandum pads, for there's a good sales story here, adaptable to other conditions. But to all of us, Commercial, Plant, Traffic, or Accounting, the fun and thrill of it is in the way the Blue Bell controls the situation. We'll all wish we could have been on the beach with Miss O'Connor.

For this picture of that tempting stretch of beach and curling breakers we have to thank Miss Morse, cashier at Asbury Park, who went to all sorts of trouble to get just the right photograph so we girls could all know the "lay of the land"—and the sea—and so understand the story better.

Boardwalk, Beach and Sea at Asbury Park. Even Here, Would You Want to Race the Telephone?

As we remember from seeing her name in "Lamps and Keys" last month, Miss O'Connor is a supervisor in the Orange exchange, and here is the story she has for us:

This summer at Ocean Grove two other girls and myself, having dressed for bathing at Ocean Grove, started to walk down the beach to join friends at Fourth avenue, Asbury Park. When we reached the dividing line between Ocean Grove and Asbury, the Life Guard informed us that we could go no further. We had spent our money for bathhouses in Ocean Grove, so we could not bathe at Asbury Park! We told him we had done the same thing before, and had been allowed to pass without question, but he said that whoever was there before him had not been "on the job."

The Guard told us the only condition on which we could pass was that we pay the price of bathhouses in Asbury. This would come to seventy-five cents. We considered it. Certainly we hated to disappoint our friends who were patiently awaiting us at Asbury. We waited and thought about it.

While the Guard was busy turning back other bathers I saw that we could have slipped by, and I was sure he could not have caught up to us if we had run. Naturally, we had no intention of trying it, but I wondered about their not providing against such a thing. I told the Life Guard I thought we could have done it.

"Oh," he said, "there are detectives on the boardwalk, and if you got by me you would not get by them."

"We could outdistance them if they are on the boardwalk and we are on the beach," we suggested.

Then with a calm, self-assured smile he settled the question. "Can you outdistance the telephone? We have one at each of our offices," he said.

We knew the efficiency of the telephone even better than the Guard who felt so safe under its Blue Bell. And we knew even better than he did how effectually that last remark of his settled the question we had been pondering. Those who were enforcing this rule had not left themselves unprotected or given anyone a chance to beat them.

At last we decided to pay the price of the bathhouses and meet our friends at Fourth avenue, but we were glad we had hesitated. It was fun to see from the outside what the service means. We knew the telephone and its attendants are always "on the job," and nothing gets by them. And it was good to see that these others knew it too, and relied on it.

Team-work, the Rule of the Road

ISN'T it fortunate that it isn't a question of personal choice whether or not people keep to the right when they walk or drive about, where there are others? How dizzy we'd be by the time we reached the office in the morning if we'd had to dodge and dash hither and yon to make our way along the street. We'd be so mixed we'd surely try to hang our typewriters on the hat tree and write our letters on the adding machine, or plug into the first answering jacks that signaled without throwing the listening keys, and then wonder what had happened to everybody to-day. Luckily such Alice-in-Wonderland tricks don't threaten us, for the rule of the road is a matter of course and nobody dreams of ignoring it unless he wants to risk a mishap. Years have proved that it works the most good for everybody to observe the rule of the road, so it has grown into custom and has become part of the common law, which doesn't even have to be written into the statutes.

At our work, courtesy is the rule of the road. Consideration, coöperation, team-

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work, whatever we happen to call that helpful understanding (or readiness to understand) between ourselves and other employees, in whatever office or department we or they may be, isn't quite so firmly established yet, as the rule of the road, but it will be in time. For the common sense of it is just the same, and when the habit has grown into custom it will be as completely recognized. Without it, we are really doing far more foolish things, many times, than hanging typewriters on hat trees, or expecting to hear a number with our listening key closed. Team-work prevents the unnecessary dashing and dodging and colliding which is sure to come without it.

The ferry boat *Fairdale* was trying to make its slip the other day, but the traffic up and down the river between her and the dock was so steady that she had to wait. Then there seemed to be a chance to swing in behind a tug and barge going down the river, and make the slip diagonally, but up the other way a powerful tug was coming. She was speeding along at a good rate, and her course lay right athwart that of the ferry. Must the *Fairdale* wait again? The people on the ferry, who had trains to catch, watched anxiously to see how the *Fairdale* could possibly make the slip without waiting for the powerful tug to go by. But evidently it wasn't as serious as it looked. Two short blasts from the *Fairdale's* whistle, and two from the tug; and then the big tug swerved sharply from her course, without slackening her speed. Instantly the ferry pushed ahead, fell in behind the barge going down the river, and in a moment had slipped safely into her berth. The big tug crossed the *Fairdale's* course just behind her and sped on up the river without having lost a moment. So there was no delay for anybody.

The rule of the road on the water, more complicated than on the land, was working just as well. And the fine part of the problem the ferry and the tug were solving was that each took it for granted the other was ready to make the move that would help. It wasn't a matter of question, or a favor asked of anyone. The best thing for both boats was for the river traffic to go on with the least possible delay or complication. Both understood it, the whistles spoke the understanding, and that was all.

Our part in establishing the law of team-work on as firm, sure, unquestioning a basis as the rule of the road is not to forget that the girls we are working with are ready to coöperate. Habits don't grow into custom if they aren't used. Take it for granted that the girl at the other end of the trunk, or beside you at the board, or across the desk, is ready to adapt her course to yours, to further the whole work, just as you are ready to do likewise when the situation is reversed. Don't assume that she is more interested in her own little corner of the work than she is in the whole thing. Maybe she is, but when she sees how team work disposes of petty difficulties and how much more sensible and practical it is, she will realize that her listening key is closed, and she has been missing the real thing in her work. We have to be ready ourselves, and realize that the others are equally ready. That is taking the law of team work for granted. We aren't asking a favor, nor is a favor being asked of us. It's all for the greatest convenience of everybody. And the principle won't be abused—not for long, any more than the rule of the road!

Don't Miss Them!

THE articles which have appeared in the last three issues of THE TELEPHONE REVIEW, written by Miss Carncross, Miss Westover, and Miss Gannon, the School Managers in the up-State divisions, have been welcomed on every side. We hear a lot about the service of the operator, and how the public regards her and appreciates her, but how rarely is the spirit which induces that high service put into words. We are so busy keeping the high standards, and raising them, that we are not prone to talk about the impelling forces by which the steady progress is wrought. It is good to have it set down, and to read about it, even though we have always been conscious of it, or have unconsciously been quickened by its power. For to put it into words brings it nearer and makes it more tangible. The spirit of loyalty thrives on expression, it is contagious, and the more we realize its power and its presence the more vital and compelling it becomes.

If any of us have overlooked one of these articles, we have missed something and a return trip through the last three issues is our next move. In fact, we would all do well to read these articles over again, for they come from those who know whereof they speak. Such words by those on the inside, who know what makes the spirit in the work what it is, who know the loyalty and happiness in work which prompts it, are good for all of us to think of again, whether we are of the Traffic Department or not, for underneath, the spirit is the same in all departments. And watch the pages of the new numbers of the magazine, for there will be more articles like this from time to time!

"In life's small things be resolute and great
To keep thy muscles trained; know'st thou when Fate
Thy measure takes, or when she'll say to thee,
'I find thee worthy; do this deed for me'?"

Who Is Operator 42 at Utica?

A LETTER received at the Utica Office from a subscriber whose number is New Hartford 132-W tells, *from the outside*, of a fine piece of work by "Operator 42." What is the story *from the inside?* An operator who makes the public feel the way the writer of this letter feels is one from whom we all want to take pattern. Who is "Operator 42"?

Here is what the subscriber says about her:

. . . The party called had no phone in his residence, and furthermore was away from his home; it was of the utmost importance that I should communicate with this party within the hour as a considerable sum of money was involved.

I requested the operator to try if possible to get my party on the phone anywhere, not knowing where I could locate him. The operator (whose number I subsequently learned to be 42) was kind, courteous, and obliging, as well as the personification of patience, and secured the party desired, undoubtedly after some annoying and provoking circumstances. Through this connection I was able to talk to the party and induced him to motor here, and as a result of my personal interview with him I secured a contract, with a good and substantial check as advance payment.

I fully realize that the Company was under no obligation to reach this party for me; the kindness of the operator who handled this call makes me appreciate the service the more. I respectfully request the honor of thanking the operator who through her courtesy and kindness was instrumental in increasing my financial position. I will take pleasure in commending the conduct of this particular operator, for it is through such employees, who have the Company's interest and welfare at heart, that the New York Telephone Company maintains so high a reputation, and is the greatest medium in the public service and economy, bringing parties in close touch, "by voice," regardless of distance, time, and expense. Yours is a worthy cause, upheld by honored and worthy employees.

This matter may possibly be an everyday occurrence to you, but in my position I feel in honor bound to call the attention of the Company and its officials, who undoubtedly value efficiency, to the conduct, courtesy, kindness, and patience of this particular operator, number 42, who was undoubtedly the direct cause of establishing the desired communication.

My telephone to-day is my most valuable office fixture, barring none; and I beg to assure you that if at any time I can be of assistance in promoting the interest of the service I shall always remain at your command.

Very respectfully,
(Signed) L. FRANK PERRIN.

Tell Us About It Next Month

UNION exchange, Jersey City, and Albany girls, congratulations! The two newspaper extracts printed on another page lead us to think you have something to tell us about some pretty fine work that's been done in your offices. There must have been some interesting individual experiences, in Albany especially, that would be helpful to the rest of us to hear about. Don't hoard your experiences, even if you are modest. *We want to know about them.*

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Emergency and Routine Service

As Seen by Two Prominent Newspapers

ON September 10, two newspapers printed editorials commending the telephone service and our employees as the result of recent experiences.

A condition existed in Albany during which, according to an editorial in the *Albany Argus* of September 10, "people have been saving all the steps they could by resorting to the telephone." The paper continues as follows: "The number of calls and the 'traffic,' as it is called, have increased by 20 to 70 per cent. in different parts of the day. Yet under such a sudden and unusual pressure the service has been better rather than poorer than in ordinary times. Albany should appreciate the fact and its best bows of recognition of it are due not only to the company and the efficient traffic division superintendent, Mr. E. G. Anderson, but to the operators, the girls who have devoted their free hours to the service of the public in the emergency and with a strain on strength and nerve force not easily to be imagined. Many are the tales that have come across the sea of devotion to duty even unto death by telephone girls in the regions of the war, and the year has seen several counterparts in this country of girls standing to their posts in time of flood and fire until the last possible warning had been sent out. In fact it is a telephone girl way. Albany's girls are of that kind, as we know now if we didn't before."

In the *Hudson News* of the same date, the following editorial appeared: "Little less than remarkable is the telephone service given the *Hudson News* by the New York Telephone Company. The office uses fifty or more calls each day, and the service given through the Union exchange leaves nothing to be desired. This article of commendation is given without solicitation, because it is merited by the company, and particularly by the girls who operate the North Hudson switchboards.

"A few days ago it so happened that central did not answer for a few moments. This delay was so unusual that the man in the *News* office commented upon it to the operator. She said that the signal had only shown up the instant before she answered for the call. No complaint was made by the *News* office, however.

"Despite this fact, within an hour there was a telephone lineman on hand at the *News* office. He was puffing and giving every evidence that he had done some hustling to get there. In a few moments he had the trouble located and checked up at the central office to ascertain if everything was all right. All of this was made without a complaint having been made.

"Alertness on the part of the central operators is one of the features of the telephone company's service in North Hudson. They could not have picked a finer lot of employees, always on the lookout to help a subscriber. Likewise credit is due to the telephone linemen who lose no time in getting around to rectify in cases of complaint."

Human Intelligence

JUST where the central office telephone operator proves herself to be such an invaluable part of the system is in the exercise of human intelligence. The illustration given by Miss Ruth Estes, night operator of our agency-operated office at Ransomville, N. Y., explains this statement.

W. H. Johnson, proprietor of the Hotel Porter, opposite the bank and postoffice building, was awakened at about 3 A.M. September 11, by an explosion. On investigating he found that an attempt was being made to crack the safe either of the bank or the postoffice. He called Miss Estes who spread the alarm by rousing more than fifty subscribers. The telephone in the postoffice is on a party line, and when Miss Estes called each of the other subscribers the telephone in the postoffice rang. Mr. Johnson, who was watching from the window in his room, saw three men run from the rear of the building, hurry down the road and jump into a small touring car.

The aroused subscribers soon began to arrive at the bank, where it was found that the outer doors of the safe had been blown off. Secure in the inner compartment were more than $14,000 and many valuable papers. The ringing of the bell in the postoffice adjoining the banking room evidently scared away the burglars, who left their booty behind them, thanks to Miss Estes.

Organization Changes

Commercial Department

H. L. Palmer, District Commercial Manager, Westchester, is temporarily assigned to the General Commercial Superintendent's Office for special work.

James Brackenridge, Bronx District Commercial Manager, in Mr. Palmer's absence, will supervise the work in the Westchester District in addition to his duties as Bronx District Commercial Manager.

W. M. Graham, Special Agent, now reporting to the Division Commercial Manager, New Jersey, will report to the Dey Street District Commercial Manager, for special work.

Long Island Division

Harry M. Ritch, salesman, Far Rockaway Commercial Office, transferred to Richmond Hill Commercial Office as Agent-in-Charge, reporting to B. B. Andrews, Local Commercial Manager, Jamaica.

Miss Mary Wickes, cashier, Hempstead Commercial Office, transferred to Richmond Hill Commercial Office.

Miss Florence E. Gundrey, stenographer and toll adjuster, Jamaica Commercial Office, transferred to Richmond Hill Commercial Office.

Miss Agnes H. Carlson, contract record clerk, Jamaica Commercial Office, transferred to Richmond Hill Commercial Office.

Wm. Robertson, salesman, Jamaica Commercial Office, transferred to Richmond Hill Commercial Office.

Hudson Division

J. K. Maisch appointed Commercial Inspector.

George O. Ronhow appointed division chief clerk.

Central Division

E. P. Brennan appointed division chief clerk, Syracuse, N. Y., succeeding W. S. Brewster.

Plant Department

New Jersey Division

Harry C. Williams, formerly special inspector, appointed line foreman, New Jersey Division.

What Happened to Davenport

WHEN Davenport became famous by the reproduction in THE TELEPHONE REVIEW of one of his drawings, he got "chesty" and communicated his feelings in the cartoon hereunto appended. It isn't every-

Drawn by Davenport to Show Us How He Felt When He Received Our August Number Containing His Cartoon.

one who can make you see how he feels without drawing on your imagination. Davenport draws only on his paper, leaving your imagination quite free to follow him, if it is agile enough to keep up.

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Enlarging Trade Territory by Telephone

WARE'S Department Store, in New Rochelle, is the largest of its kind in Westchester County. Quietly and unobtrusively the telephone has entered every part of this great store like a system of nerves, ready to vibrate with every wish of its customers, and perform all their many demands like a well-trained servant.

A private branch exchange with five trunk lines to the New Rochelle central office and thirty-two extensions connect every department, and as I walked through this store, waiting for an interview with its vice-president, telephone bells were ringing on every side; now it was an order for shoes, now it was handkerchiefs, now table linens, now gloves, now toys, now stationery, now millinery, and so it went on, so smoothly that it would have been unnoticed if you had not been looking for it.

I felt that it would be a shame not to bring this splendid store right to the doors of the greatest possible number of people, and with Mr. Knapp, the vice-president of this progressive concern, a careful study was made of telephone conditions in New Rochelle and its surrounding territories. Let me tell you that this "shopping by telephone" campaign is the best method of promoting a perfect harmony between our Company and its subscribers I have ever known. It developed that the trade of New Rochelle, Larchmont and the Pelhams was being handled over the telephone to a large extent, but the field was limited, and Mr. Knapp wished to reach out and secure the trade that was located in the nearby territory. Now right at his door, telephonically speaking, lay Mt. Vernon, Bronxville and Tuckahoe, but a toll charge of 5 cents prevented a large number of people in these towns from availing themselves of the opportunity to trade in New Rochelle. I immediately suggested a private branch exchange trunk from his switchboard to terminate in the Mt. Vernon central office, with a Mt. Vernon call number.

This formed the solution of the great difficulty, but to my mind did not go quite far enough, so I also suggested that a personal call be made to each and every subscriber. As this involved calling approximately 6,000 subscribers in these three exchanges, a careful analysis of the cost of time and labor involved was made and compared with the cost of sending a personal letter to each and every one, *and the telephone proposition won out handsomely.*

Word was given to get figures to cover the actual cost at once and here is where the splendid coöperation of the different departments helped me wonderfully. Let me tell you about it. On a Friday, at 11.30 A.M. the Plant Engineering Department was called and figures for the exact number of feet between New Rochelle and Mt. Vernon asked; at 11.45 A.M. this information was given complete; at 11.48 the Traffic Department had given 3800 Mt. Vernon as an assignment for call number; at 12 noon the local Plant Department had assured me that connections would be completed the following day; at 12.30 P.M. the contract was in Mr. Knapp's hands for signature; at 1 P.M. it was in the New Rochelle commercial office properly signed and witnessed (just one hour and a half); on Saturday, at 2 P.M., the work was completed; and, best of all, at 3 P.M. the first calls were being made to Mt. Vernon subscribers.

Great? No name for it! And Mr. Knapp says: "This is the greatest thing I have ever tried and I shall work it for all I am worth."

On Saturday, he placed a full page advertisement in the Mt. Vernon *Argus*, calling attention to the fact that special telephone service had been installed just for the benefit of Mt. Vernon, Bronxville and Tuckahoe people. He intends also to have at least 5,000 circulars printed for distribution in these territories to reach those who do not take the daily papers in which his advertisement appears, or who are not telephone subscribers.

Rates are under consideration to cover Mamaroneck and Harrison and eventually, as the business grows, White Plains and Port Chester will be added to the great family that calls Ware's Department Store "home."

To be enthusiastic, to believe with all your heart and soul that the proposition you have to offer is big and good and fine gives a feeling of satisfaction that carries its own reward; but nothing can compare with the pleasure it gives you to have the subscriber to whom you have carefully brought home the truths of the "shopping by telephone" campaign tell you, as I have had Mr. Benedict, sales manager of this concern, tell me, that it has been the means of securing a great deal of new business as well as of bringing back to the store people who had withdrawn their trade for one reason or another.

That this is due entirely to his following out your suggestions makes you feel even better, and it seems as though you have indeed been a messenger of good tidings to him, binding him in a closer bond of friendship to the Company of which you are proud to be a part.

B. H. DISBROW,
New Rochelle Commercial.

Employees the Best Advertisements

A FACT of human nature that everyone has probably observed is that a comment or observation made by members of your own family often passes unnoticed while the same observation from an outsider burns itself into your mind and influences your conduct to an astonishing degree. In a recent issue of the *Electrical Review and Western Electrician* is an article entitled "The Advertising Influence of Employees," written by F. R. Slater, General Superintendent of the Texas Power and Light Company, of Dallas, Tex. Someone quite outside the telephone family, you see. In this able treatment of the relations between employees and the public, and its results upon the business and reputation of the company, we find words which have long been foundation principles and repeated doctrines in the family of telephone employees. Coming from an outsider and spoken, not in regard to telephone problems, but to the general field of public utilities, the familiar advice appears in a new light, and with added strength.

We quote from the article:

Every employee of every business has a potential advertising value.

The three best assets of a public utility are satisfied customers, a pleased public, and contented employees. The employees from the highest down to the lowest have a direct influence in producing all three of these conditions, therefore their advertising value or their value as a means of identifying the company, its aims and its aspirations, is very great.

The heads and executives we seldom, if ever, see; the visible parts of the business are the local employees with whom we come in frequent contact. If these are courteous, if they show consideration, if they are inclined to observe the customers' rights, the business will gain good will and confidence, and will therefore become "identified" as a desirable concern with which to do business. That employee or group of employees who can produce this condition of good will and confidence is a valuable asset to the company, and is the very best advertisement that it can have.

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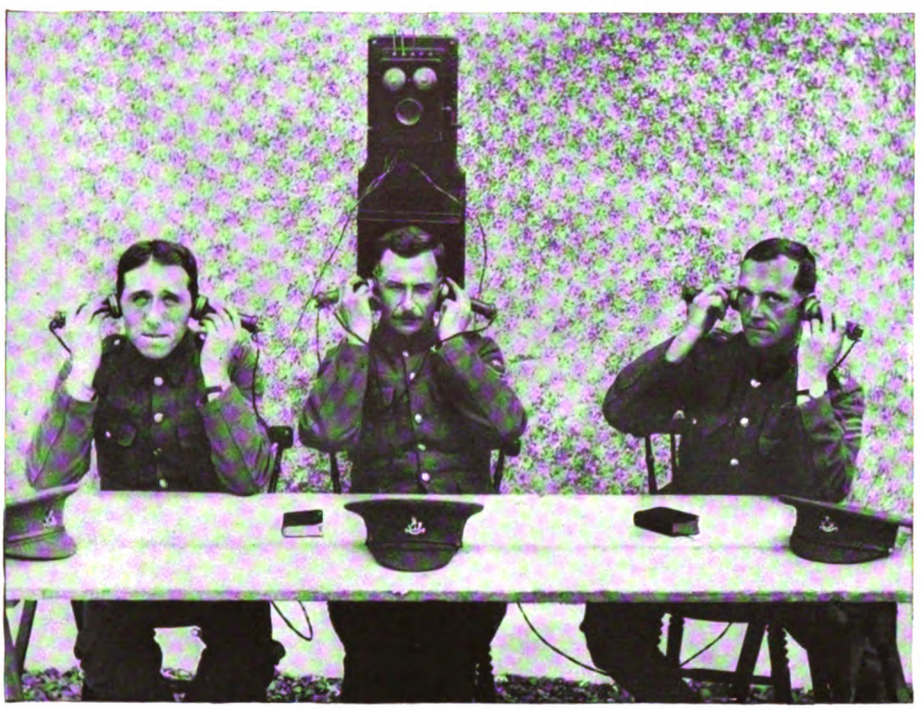
Hide and Seek With the Telephone in War

ONE of those sharp contrasts between conditions of war and of peace which are not significant in themselves but insistently make their presence felt, is that of the telephone exchange which must be so ingeniously hidden when it is performing its war service, although in peace, at least in our Company, it is a marvel which everyone may see and wonder at.

The cleverness with which the telephone stations are concealed from the enemy is described in detail by E. Alexander Powell, of the *World*.

Leaving our cars three miles from the outskirts of Soissons, we pushed our way through dense undergrowth up a hillside until we came quite suddenly upon the yawning mouth of a tunnel, which I surmised passed completely under the summit of the ridge. Groping our way through inky blackness for perhaps an eighth of a mile, we suddenly emerged into the blinding glare of sunlight and found ourselves in one of those secret observatories from which French artillerists keep an unceasing watch on the movements of the enemy and, by means of telephones, direct and control the fire of their own batteries with incredible accuracy.



GUERNSEY MILITIAMEN LISTENING TO CHURCH SERVICES

Owing to Zeppelin raids militiamen in Guernsey, Channel Islands, are constantly on the lookout for airships. Being unable to attend their church services, they have had telephones connected from St. Peter Port Church to their station, 5 miles away, where they can listen to the services without leaving their post.

PHONE EXCHANGE ALSO THERE

This particular *observatoire* was located in the mouth of the tunnel and hence was entirely safe from detection by German aviators, while its front had been so cleverly screened with branches and foliage that it would defy the keenest eye a thousand feet away. Pinned to the earthen walls were contour maps and fire control charts. Powerful telescopes mounted on tripods brought the German trenches on the heights across the river so close that had a soldier shown himself we could almost have seen the spike upon his helmet. A military telephonist with receivers clamped to his ears sat at a switchboard and pushed buttons or pulled out pegs just as telephone girls do in hotels on Fifth Avenue.

An officer in a smart uniform of dark blue, with the scarlet facings of the artillery service, beckoned me to come forward and indicated a small opening in a screen of branches.

"Look through there," he said, "but please be extremely careful not to show yourself or to shake branches. That hillside opposite us is dotted with enemy *observatoires* just as this hillside is dotted with ours and they are constantly searching this ridge with powerful glasses in hope of spotting us and shelling us out. Thus far they have not been able to locate us. We have had better luck, however, for we have spotted two of their fire control stations and cleared them out." . . .

This artillery warfare is after all but a gigantic edition of the old-fashioned game of hide-and-seek. When you see your opponent, however, instead of tapping him on the shoulder and saying politely "I see you," you try to kill him with a three-inch shell.

Of course the wires, too, have to be hidden, except where the telephone system is comfortably established, more or less permanently, behind the lines. The *Youth's Companion* describes the laying of the wires thus:

According to "Great Deeds of the Great War" the [wire] section is made up of two vehicles, one of which is the limber, and the other of which carries, not a gun, but a great drum, upon which are wound many miles of cable. As the section goes forward, a ratchet on the hub of a wheel engages another on the drum, and the cable is unwound. Behind the drum rides a soldier, who carries a lance-like pole that ends in a hook instead of a blade. As the cable unwinds, the soldier deftly catches it and thrusts it aside, so that it will be clear of all traffic. If the telegraph or telephone system is to be more or less permanent, the engineer section that follows stretches the wire on light poles that they take from one of the wagons. If the section is moving rapidly in dangerous country, it pays out, as it travels along, a heavily insulated ground cable, and swiftly hides it beside the road—in a ditch, for example.

Precautions are not always successful, however, and discovery leads to strange and spectacular events. This story from the New York *Evening Journal* gives a vivid picture of a thrilling incident, the more startling because of the calm and matter-of-fact way in which it is treated by the participants:

Italians Scale Hill to Austrian Post and Steal Telephone.—The captain of a detached Italian outpost in the Arsa Valley found his telephone apparatus injured. Turning to his men he said: "Fetch that 'phone up there," indicating an Austrian outpost a thousand feet above.

A dozen men returned after three hours, bringing the apparatus and also the enemy's rifles, having bayoneted every Austrian at the post. They handed the telephone to the captain, saying: "We hope that will work. If not, we will go and get you another."

In the *Hudson Dispatch*, Jersey City, we read of another telephone man who, although not discovered in his hiding place, underwent all the inconvenience and danger incident to discovery, and yet escaped unscathed:

The *Gazette de la Bourse*, of Petrograd, tells a story of a telephonist who was the only Russian living when the post was captured by the Germans. Huddling in his hole, protected by sandbags, he telephoned to the artillery to fire directly at him, and they would get the Germans. The battery changed its aim accordingly, and the telephonist transmitted the result of the fire as coolly as if he were not the target. Shells rained upon the place and the Germans were repulsed, leaving their dead. When the Russians reoccupied the position they found the telephonist still unharmed in his hole.

Query: Did It Work?

An Episcopal clergyman, rector of a fashionable church in one of Boston's most exclusive suburbs, could not be bothered with the innumerable telephone calls that fall to one in his profession, so he had his name left out of the telephone book. A prominent merchant of the same name, living in the same suburb, was continually annoyed by requests to officiate at funerals and baptisms. He went to the rector, told his troubles in a kindly way, and asked the parson to have his name put in the directory. But without success. The merchant then determined to complain to the telephone company. As he was writing his letter one Saturday evening the telephone rang, and the timid voice of a young man asked if Rev. Mr. Blank would marry him at once. A happy thought came to the merchant. "No, I'm too damn busy writing my sermon," he replied.—*Rochester Evening Times.*

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The Human Element

By L. H. Ehrbar, Plant Department, New Jersey Division

MUCH has been said and written in these pages and elsewhere regarding the attitude of the telephone users towards the operators, with whom the public come in daily contact. Little has been said, however, about the public and the general employee, whom the public often meet face to face, as for instance, the commercial man or "service getter" and particularly the plant man, who at this time of the year is especially busy providing means for the service.

In general, however, the impressions formed by the public are gained almost entirely from its contact with the minor representatives. Too much stress cannot be placed on the fact that lack of courtesy in one form or another has more to do with general dissatisfaction than can be imagined. Almost every employee can recall an instance when a courteous reply had a most favorable effect upon the person addressed. How often men in the course of their routine work are approached by people, a bit curious as to why the work is done thus or so—not overbearing but simply inquisitive, which is merely human nature—like the interested bystander who requested of the young surveyor whether he was laying out a trolley line or a telephone? "Neither," shouted the chainman, "we are going to move the street end for end," and immediately the fight was on.

The duties of the Plant man, and particularly the construction man, for it is he who is supposedly trespassing oftener than not, are very exacting as regards the public. The privileges that are granted and frequently secured under trying conditions, by the patient Right of Way man, are sometimes temporarily denied or entirely revoked just because someone has overlooked the apparently minor detail of being courteous. A "good morning" greeting to the irate owner or tenant has often saved the day and probably saved the way for additional grants directly or indirectly. It frequently happens that conduits and cables are placed on premises where the permissions for placing them were granted weeks and even months prior to the time of the installation and when the fact of granting the permissions had long been forgotten by the owner or occupant. A word to either or both, as the case may be, before actually starting operations, to the effect that permissions had been received and that the work would be done as quickly as possible, often simplifies matters very much.

Any damage done must be promptly repaired, and if it is not practical to do so in a reasonable time a word of explanation to the interested party is always appreciated.

The language of the employees toward each other while at work is always a reflection, either for good or bad, on the Company.

In a word, every employer, whether an individual or a company, desires friends, in fact needs them for the success of the business, and it is particularly through the conduct of the employee that friends are made.

Orders His Telephone at Last

HARVEST was reaped in Brooklyn the other day from a seed planted over fifteen years ago. Mr. H. W. Drake, division commercial manager, Long Island, forwards an appointment card bearing the date line "189–." The card was mailed July 14, 1915, and was received at the Flatbush commercial office the next day. Let this not be a solace to the tortoises—if there be any among us. Fifteen years is over long to wait for a contract. But this case testifies to the fact that the silent partners of the salesman—appointment card or advertising literature—till a dormant field, sometimes. Not only do they make ready the soil for the salesman, but, as in the present instance, they raise a modest crop by themselves.

The Right Idea

WHILE installing service for one of our new subscribers in Mount Kisco, the local Plant man doing the work noticed that a garage in course of construction on the premises was located some distance from the house, and during a conversation with the subscriber he suggested the value of an extension station connection. As the subscriber seemed interested, he reported the situation to the local office with the result that an additional station was installed.

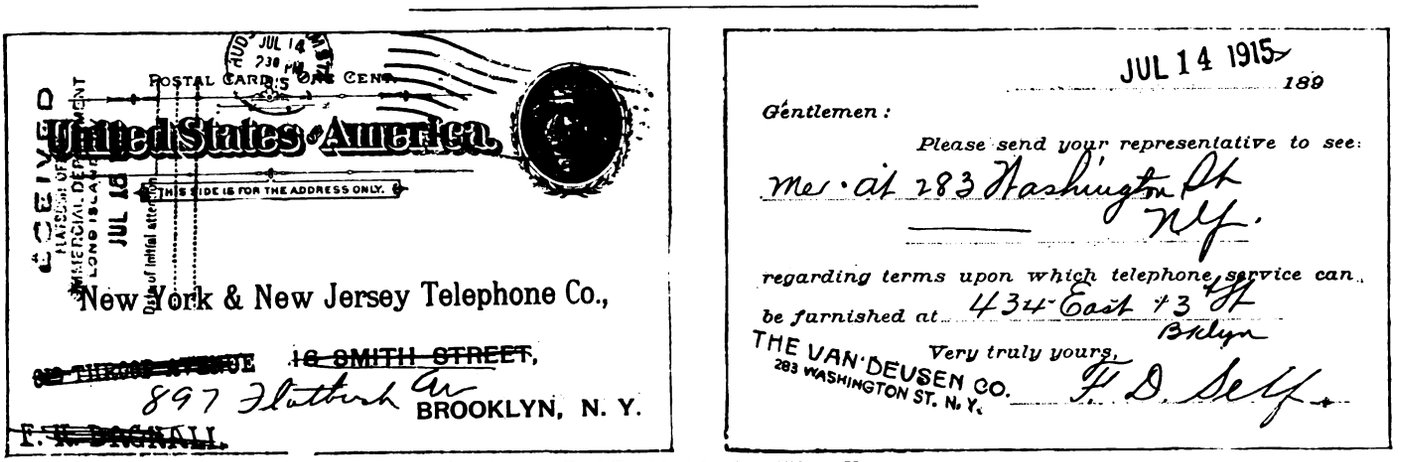
The above is only one instance of many where coöperation between the Mount Kisco Plant Department and Commercial Department has been shown.

EDWARD W. JACKSON, JR.,
Mt. Kisco Commercial.

Less Than Two Cents a Day

THE same day that he received an extension station booklet with the above title, a Morristown subscriber called at the commercial office and asked for an extension of the service for less than two cents a day additional. He stated that occasionally he would make calls to Brooklyn and Newark, and if for this small additional charge he could get an extension of the service, he for one would make a contract to that effect. After a proper explanation of an extension telephone was made, the subscriber said frankly that he was disappointed, and that he had no use for another telephone. We hope to sign him up, however, in a short time, for an extension telephone.

G. C. SMITH,
Chief Clerk, Comcl. Dept., Morristown.



Appointment Card Cherished for Over Fifteen Years

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Convincing a Doubting Thomas

How a Plant Man Got in Some Good Commercial Work

HERE is a story which gradually developed out of a telephone message to the Editor from Mr. O. R. Albrechtson of the Plant Department, Manhattan-Bronx-Westchester.

It not only shows what a plant man can pick up in his daily rounds and among his acquaintances, or even what he can give us that will make a good story, but it also furnishes a most practical and instructive illustration of the value of telephone service, which every commercial representative of the Company should be able to use with convincing effect in canvassing for business, and in that equally important part of his work, which consists of suggesting to subscribers how they can make their telephone a more efficient partner in their business.

Mr. Albrechtson telephoned that among his acquaintances are two butchers; one in West New York, and the other in Union Hill, New Jersey.

The West New York butcher hitches up his horse and wagon every morning and drives over to Manhattan to purchase his stock of meat. He pays 25 cents ferriage each way, making a total of 50 cents for this item alone, and a good portion of the forenoon is spent in shopping around among the wholesalers, who, realizing his ignorance of market conditions, have him at their mercy. An inquiry among these wholesalers regarding customers who come to them in this way has revealed the fact that they tip each other off by telephone, and take advantage of such buyers both in the price and quality of meat. The result to this West New York butcher is that although he has been in business a great many years, he still conducts a small shop in one of the poorer sections of his town; he has all the expense for his own time and cartage; he pays from a cent and a half to two cents per pound more for his meat and has to charge a higher price, and makes less profit than his Union Hill rival. Again, he sends out his wagons among his customers in the morning soliciting orders, and sends them out again to make deliveries, and this business, together with what he sells to patrons who come into his store, constitutes his entire trade.

When he was asked why he conducted his business in this way, he replied that when he bought his meat in person, he knew what he was buying; that when he sent out his wagons for orders, it was only to old customers who had confidence in him, and that the rest of his customers wanted to see what they were buying just as he did; consequently, he saw no reason why he should change the methods which he had been following for the past thirty years.

Mr. Albrechtson asked him, "Don't you ever use the telephone?" and he replied that a telephone might be all right in some lines of business, but he didn't believe that it would be of any value to him, so he hadn't a telephone in his shop.

Mr. Albrechtson then asked him if he were going out to the Exposition in California. He replied that it would be impossible on account of the expense, and besides he could not leave his business.

"I would like you to meet another friend of mine," said Mr. Albrechtson, "but you will have to do it before next Wednesday, or wait until fall, because he starts with his family for California on that day."

"Why do you want me to meet him?" asked his West New York friend.

"Why? Because he buys his meat cheaper than you do, sells it for less, and makes more money," replied Mr. Albrechtson.

And so a meeting was brought about between the West New York and the Union Hill butchers. It developed that they were already acquainted, although they had not seen each other for a long time. After an exchange of greetings and reminiscences, the Union Hill butcher explained how he conducts his business. He said he has the largest meat and poultry business in his town, buys in larger quantities, and sells at lower prices than any of his competitors, always has on hand the best quality of meat and poultry, and frequently has special sales at cut prices when the wholesalers are overstocked and offer him bargains.

In less time than his West New York neighbor has been in business, he has built up a much larger trade and made enough money to take a trip to California out of some of his accumulated surplus. This is how he has done it:

Early every morning he calls up all the wholesalers from his telephone and asks them for the day's market prices. One after another he jots down their replies. They all know that he does this, and as his business is large enough to be worth while, they all quote him their best prices. He then looks over his memorandum and calls again to place his orders where he can buy the cheapest. The deliveries are made to his place of business by the wholesalers, free of all expense to him, and his telephone calls do not amount to as much as the ferry charges alone which the other man has to pay. When the deliveries are made to him, he makes a careful inspection, and if the quality of meat or poultry does not come up to his demands, he makes the wagon take it away again, and immediately calls up some other wholesaler and places his order there. Because of this, none of them dares to send him inferior meats or poultry, but they keep that kind to sell butchers who drive up and take away whatever they can get—like the man from West New York.

When it comes to poultry, there are seasons when he can find a better market in Baltimore, and formerly he would make a trip down there two or three times a year, but since he has found how advantageously he can buy by telephone in Manhattan, he has discontinued his trips to Baltimore and keeps in touch with the poultry market there by telephone constantly. Thus in the poultry line he plays New York and Baltimore against each other for his own benefit.

This was a startling revelation to Mr. Albrechtson's friend from West New York, but there was more to come.

The Union Hill butcher never sends out one of his automobiles to take orders (he uses automobiles instead of wagons). Most of his regular customers call him up by telephone and place their order, and these are being delivered while the other butcher has his men out with a horse and wagon soliciting. If any of his regular customers have not placed their orders when his first deliveries are being made, the driver may stop to inquire for them, but as a rule he finds they have been telephoned in since he left.

"What about your cash trade?" inquired the other butcher.

"We have a very large cash trade, and there are still many customers who prefer to come and select their own meat and poultry," replied the Union Hill butcher.

"By the way, Mr. Albrechtson can tell you of a great favor he conferred on me recently in this connection. He dropped into my store one day just before Thanksgiving, and saw a good many customers who wanted turkeys weighing about so many pounds, according to the individual requirements. Mr. Albrechtson noticed that one salesman after another would take down the same turkey, weigh it and put it back on the hooks as not being just the weight required by this customer or that. In this process the announced weight of the same turkey would vary from nine and three-quarters to ten and a half pounds, with a corresponding difference in the price asked. This was partly due to the inability of the salesmen to calculate the

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price rapidly, when any but the commonest fractions were involved. After observing this for a while, Mr. Albrechtson showed me one of the disconnection tags which the Telephone Company uses on cross-connecting boxes, and suggested that I have every turkey weighed and tagged with the weight and price so all the clerks would give the same answer regarding the same bird, and I would not be stuck or overcharge my customers. I sent out and got a lot of tags, and Mr. Albrechtson helped us until two o'clock next morning, getting ready for the following day's business."

"Are your customers satisfied who order their cuts by telephone?"

"I've got to satisfy them. It is up to me to do this, or lose their trade. I won't take what a wholesaler sends me unless it is good, and I cannot expect my customers to act any differently toward me. I send them the best."

Referring to special sales, Mr. Union Hill Butcher gave an illustration which occurred only a few weeks ago as typical of what is occurring all the time through the ability of the wholesalers to reach him readily by telephone. A large consignment of meat for Europe was sent from the West for a steamer which was scheduled to sail on a certain day. One carload from Swift & Co. arrived a few hours after the ship had left her dock. Immediately the telephone wires began to hum as Swift & Co. tried to dispose of this excess car of first-class beef. Mr. West New York didn't get a chance at it because he had no telephone, but Mr. Union Hill saw a chance, made a bid, and had a special sale which netted him a handsome profit, and gave his customers an economical dinner.

"Tell him about your San Francisco trip," suggested Mr. Albrechtson.

The Union Hill butcher explained that they were leaving on the following Wednesday, as stated, and at first he had arranged for his office to call him by telephone at Chicago, Omaha, Salt Lake City, Denver, San Francisco, Los Angeles, and points on his way back, according to a schedule which he would prepare and leave with his manager; but in preparing the schedule, his wife insisted upon an extra day or two at one point, and his children wanted a few days extra at other points, so that after consulting with Mr. Albrechtson he decided that instead of having his office call him he would arrange to call his office at each point where he stopped, both outward and return, and thus with intervals of only a few days he would be in constant communication with his office and business regardless of distance.

The result of this was that the butcher in West New York was induced to let a salesman come to see him from the Local Commercial office in Jersey City, and Mr. Orr's young man put the finishing touches to the good work done by Mr. Albrechtson.

Three days after the telephone was installed the new subscriber was climbing a hill with a wagonload of meat, when his wagon broke down. Then he blessed goodness for his telephone; he called up his store and his son came right out to meet him with another wagon to finish the trip.

A Tip on Government Ownership

The Canadian Government as Railway Builder

The National Transcontinental Railway reaches from Moncton, N. B., to Winnipeg, Manitoba, 1,804 miles. Planned by the Liberals in 1903, the line west from Winnipeg to Prince Rupert was to be built by the Grand Trunk Pacific, the eastern division, from Moncton to Winnipeg, by the Canadian Government. The Grand Trunk Pacific was to lease, equip, operate, and maintain the eastern division for fifty years after its completion, at a rental of 3 per cent. a year on construction cost after the first seven years. The Grand Trunk Pacific has declined to fulfill the agreement on the ground that the so-called completed division is not complete, and more particularly because the Government has spent so much in building it that it can't be operated without loss at a 3 per cent. rental on cost. Here the story of this Government venture in the railroad business becomes profitable for instruction and reproof to the brethren of the government ownership school in this country.

In 1903 the Minister of Finance made "a liberal estimate" of the total cost, $61,415,000, a little over $34,000 a mile. By September 30, 1911, $109,000,000 had been eaten up; the chief engineer calculated that by the time the road was done it would have eaten up $161,300,000, without interest. Had it been then completed the Grand Trunk Pacific would have had to pay rent on that sum, with interest of $18,700,000 added, a trifle of $5,400,000 a year.

But the ball was still rolling. At the end of 1914 the road had eaten up $173,000,000, not counting interest, almost $99,000 a mile, nearly three times "the liberal estimate" of the Liberal Minister of Finance. The Conservatives came to power. Here was meaty matter of investigation. A Government commission was set at work. Making all allowance for partisan zeal, it should be remembered that the chairman of this commission used to be general manager of the Canadian Pacific, and is now general manager of the Canadian Government Railways. The Commission found that at least $40,000,000 was "needlessly expended" in building the road, not counting what was wasted "in building the railway east of the St. Lawrence." It found that should the Grand Trunk Pacific begin to pay interest on construction cost in 1922, the Government road would have cost $234,651,251. A lovely light on Government business methods is shed by the report. For eight years not a man on the Government board in charge knew anything about building or operating railroads or had ever engaged in either work. The location of the line was so Gilbertian that the very words of the report must be used:

"Having decided upon the design, the Commission proceeded to find a country to fit the design. It may seem incredible, but it is the fact, that it was assumed that the road would at once receive the maximum business it was possible to carry over a single track, low-grade road. That there was an entire lack of business along the line does not seem to have occurred to them. The Government and the Commission settled on the design of the road before a reconnoissance survey had been made, simply guessing at its cost."

Naturally the contractors took advantage of these innocents. Only five bid for 806 miles; only eleven for the whole work. It was sublet to subcontractors, who in case of a private line, subject to common sense, would have bid on their own hook. The eleven made $8,800,000 on the sublet contracts. Contracts didn't always go to the lowest bidders; some $3,300,000 more than their due was paid to contractors on account of a muddling classification of work. To summarize in part the bill of waste:

"That $6,200,000 could have been saved by the adoption of different grades; $2,400,000 by the adoption of curves of a shorter radius; $2,947,227 by the use of wooden trestles instead of fill and steel structures; $3,250,000 by the acceptance of an offer from the Grand Trunk Pacific to fill wooden trestles at 25 cents per cubic yard; $2,750,000 by the adoption of pusher grades across the Little Salmon River Valley and at La Tuque, and $679,692 by the construction of six miles of additional track where the statute provided for a single track, but where the Commission built double track."

And so on, further than we can go, but the payment of $7,950 to one man for political work under pretense of a damage claim is too good to lose. Incredible incompetence, gigantic extravagance (including $4,500,000 for shops which, according to the investigators, were not authorized by law, and are twice too big, anyway), the worst business methods; a proud record of paternal railroad building. Naturally the Grand Trunk Pacific refused to pay some $3,000 a mile a year for a road through an unsettled country and cut to fit the country. The Government has its treasure on its hands. It is operating the road doubtless as successfully as it operates the Intercolonial, which ran behind some $160,000 in 1913.

Government, borrowing money at cheaper rates than corporations can, can build and run railroads more cheaply than they. So the Government ownership folks. Tell that to the taxpayers of Canada.—*Editorial in the New York Times, Saturday, September* 11, 1915.

Let the Other Fellow Talk, Too

A young man writes to this office to inquire whether it is possible, as he puts it, to "overdo a good thing." He says he is a salesman—a fluent one, if his letter is typical of his selling talk—but he doesn't get the results he thinks he should. He wonders if he is handling his customers to the best advantage.

Possibly not. Judging once more by his letter, he may have a tendency to do all the talking himself.

There is a story of a life insurance agent who was trying to sell a policy to a stammering man. He had the policy sold several times over, but each time before the stammerer could tell him so, he would start off on some more persuasion. The result was that the man got worn out and mad and refused to take the policy.

It is quite possible for a man who is selling goods, or raising money, or trying to convince others of something, to do so much talking that the other fellow never gets a chance even to say "yes."—*Kansas City Star.*

This side of the question of salesmanship is a real one. It doesn't do to be so much interested in the job in hand as to ignore the man that's going to make that job a success. It's decidedly unflattering to him. Don't forget, in your enthusiasm over the powers of the telephone, to notice how your remarks affect your listener. Pay him the compliment of your attention. It's as much a part of your job as having a contract blank on hand.

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An Unusual Case of Electrolysis

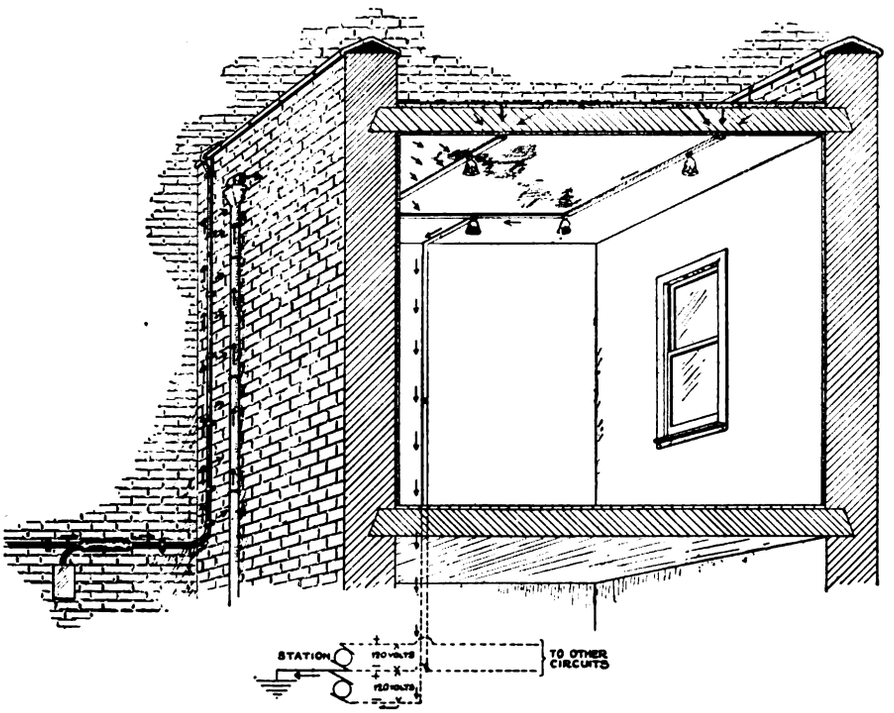
How Failure of Telephone Cable Found Cause of Leaky Roof

By W. L. Koch, New York Plant Department

PECULIAR cases of electrolytic action on cable sheaths are sometimes experienced. One which occurred in the Metropolitan Division recently had several points that are interesting.

A block cable failed on the side wall of a one-story extension, and the sheath was found to have been badly pitted. This cable had but recently been placed. In removing it to make repairs a strong electric current could be felt in the leader pipe and wall, which was damp from recent rains. Service was restored and the cable temporarily suspended on a wire attached to the roof until an investigation could be made as to the source of the stray current.

At some time previous the roof of the extension had leaked, the water running through the ceiling and some of it getting into a metal molding electric light conduit, crossing the wires with the duct. This conduit contained the negative and ground sides of an Edison three-wire circuit and was not metallically grounded. The switch on this circuit was placed on ground side. It will be seen that the conduit being crossed with the negative side of the circuit would take that potential, which was 120 volts negative to ground. Therefore, any grounded object was 120 volts positive to this conduit.



Showing Where Cable Failed on the Wall, and Path Taken by the Current

It was this stray current flowing from the cable sheath to the damp brick wall that had caused the electrolytic action. The cable was not alone affected; the tin roof also had the same electrical relation and was also being consumed. After each successive rain the roof had been patched, but always seemed to leak, enough water leaking through each time to keep the ceiling and walls saturated. The real cause of the trouble was not suspected until demonstrated by the man who made the investigation for the Telephone Company.

The premises were occupied by a firm of decorators whose goods had repeatedly been badly damaged by the water. They were very grateful to know the real cause of the trouble and also to know that the dissipated current was the current they were paying for.

The electrical contractors who made the repairs to the circuit were very much interested, saying it was the first time in their experience that they had met a case of this character.

Several friends were made for the Company through this case, because all those interested—the firm of decorators, the electrical people, and the owners of the building—were benefited in having the trouble cleared up. While the percentage of this kind of trouble is small, all similar cases are handled in the same manner. This particular case, of course, had several unusual features that had not been experienced before.

The Operator

By Charles B. Tutty

Telephone Operator at Police Headquarters, Rochester, N. Y.

WHO is it answers every call,
In summer, winter, spring, and fall,
And never gets things right at all?
The Operator.

Who's never right, but always wrong,
And all day hears the same old song:
"Oh, go to Heaven, where you belong"?
The Operator.

Who's cussed and damned for every fake,
And treated as you'd treat a snake;
Who feels like jumping in the lake?
The Operator.

Who is it stands for all abuse,
The one with whom you raise the deuce;
Who never has a good excuse?
The Operator.

Who is it that will always strive
To give you "Two" or "Six" for "Five";
Who has no right to be alive?
The Operator.

L'ENVOI:

But when the Judgment Day rolls 'round
Who'll be the first one on the ground,
And with a harp and wings be found?
THE OPERATOR.

Telephone Slumber Music

CURING insomnia by telephone is the latest convenience the McAlpin Hotel provides its guests. Anything new in the luxuries of telephone service can usually be found in New York hotels and the McAlpin has raised the perfection of telephone luxury to the *n*th power. The music of the hotel roof garden has power to lull the restless New Yorkers to sleep. The drowsy patrons of the hotel have formed the custom of going early to their rooms, where, connecting their room telephones with the roof garden, they are soon wafted to slumber by the melodious strains brought over the wires.

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The TREND of REGULATION

By R. V. Marye, General Attorney

Service Between Exchanges; Toll Service to One and Free Service to the Other Does Not Constitute Discrimination

THE Cole County Telephone and Telegraph Company of Mattoon, Ill., gave to the subscribers of one of its exchanges free connection with another exchange, to the subscribers of which it made a charge for connecting with the first mentioned exchange. The City of Mattoon complained of this practice to the Public Utilities Commission of Illinois, which held on May 20, 1915, that it was a lawful practice, since a telephone company may furnish free toll service to subscribers provided that the same is given to all subscribers alike, the expression "to all subscribers alike" meaning to all subscribers similarly situated; i.e., to all subscribers of one exchange.

Commission May Fix Rates Regardless of Franchise

THE Hollister Water Company applied to the California Railroad Commission for authority to increase its rates, asking, among other things, that a rate be fixed for water furnished to the city for fire protection. The city objected, claiming that the ordinance or franchise under which the company operated provided that the city should always have water free for fire protection and that, therefore, the Commission had no power to fix a rate for such service. The Commission held, on June 21, 1915, that it had the power to fix rates, regardless of contracts heretofore made, and that there is no distinction in this respect between contracts made with individuals and contracts made with the city, and that, moreover, when the franchise in question was granted the power to fix rates was latent in the State but nevertheless existed, and that any contract made must have been made subject to said power when the State saw fit to exercise it.

Rate Prescribed by Statute Binding Until Declared Unreasonable or Confiscatory

IN passing upon the validity of a State statute limiting railroads to the rate of 2 cents per mile for carrying passengers, the Supreme Court of Appeals of West Virginia, in the case of Public Service Commission *vs.* Baltimore and Ohio Railroad, decided on June 1, 1915, held that the rate fixed by the statute remains the paramount law binding upon the carrier until such time as, upon application by the carrier or someone injuriously affected, or upon the initiative of the Public Service Commission, such rate has been investigated by the Commission and judicially determined to be unreasonable or confiscatory as to a particular carrier and therefore invalid; and that until then or until such law has been otherwise amended or lawfully nullified, the Commission had jurisdiction to compel observance thereof by any carrier.

The court further held that, until the Commission had investigated and determined that a particular rate complained of was unreasonable and invalid, the courts could not interfere to prevent the Commission from performing its proper duties and functions under the statute which created it.

Discrimination—Single Bill for Several Installations

THE Oregon Railroad Commission held on April 27, 1915, in re Oregon Power Company, that an electric utility whose tariffs provide lower rates as the quantity consumed increases, may not lawfully contract with a single user who desires to be served in different localities that a single bill should be rendered for the aggregate quantity consumed in order that the total charge made may be less, as such practice would immediately result in an undue preference to such consumer and an unjust discrimination against other patrons.

Physical Connection

THE Blairsville Telephone Company petitioned the Public Service Commission of Pennsylvania for an order directing that the Johnstown Telephone Company and the Windber Telephone Company should permit it to make physical connection with the latter through the Johnstown Company. The Commission held, in June, 1915, that it can require the making of such connections only where the same are feasible without injustice to either company or substantial impairment or detriment to the service of either, and where necessity exists therefore and the different localities involved cannot be communicated with by the lines of either company alone, and where such service is not already established or provided for.

The Commission states that the term "locality" with respect to the Blairsville Company means the immediate territory served by said company, and that the other locality in this case is that of the Windber Company which includes the territory served by that company in the vicinity of Windber, and that since the Windber Company has through the Bell Company a connection and interchange of service with both localities and there is no evidence that such connection is not adequate to the "locality" of the Blairsville Company or that public necessity requires a new line between the two localities, the petition must be denied.

Unlimited Free Service Between Exchanges

THE Surprise Telephone Company, operating in Nebraska, petitioned the State Railway Commission for authority to increase its rates and to extend its "county right" service to all subscribers. This "county right" service permitted unlimited connection with all subscribers on applicant's system, consisting of nine exchanges, at one of which the rate was $1.50 per month with such unlimited service, while at the others the rate was $1 a month with an additional flat rate of 50 cents per month for such "county right" service. The company proposed to increase all rates to $1.50 per month. The Commission held that while a fairly equitable schedule of flat rates for unlimited service may be established within a telephone exchange, the only proper and just method beyond the exchange limits is the measured service, and that applicant should not therefore be permitted to extend the free exchange service to all subscribers as it would result in various forms of discrimination not the least of which would be the imposing of a charge upon a large class of subscribers who would not care for the service.

Connection With Delinquent Subscribers

A. J. CRIDER complained to the Missouri Public Service Commission that T. F. Waters, who operated a telephone system in Marin County, Missouri, had, among other things, refused to connect his telephone with the station of a patron of the exchange whose service had been discontinued because of non-payment of rentals. The Commission decided on June 14, 1915, that since local exchange service is primarily a connection from one subscriber's station to another subscriber's station or from a public pay station to a subscriber's station, the telephone company, in furnishing such service, is not obligated to connect a calling patron with a person called for who is not at the time purchasing such local exchange service, and that defendant's refusal to make such connection for plaintiff was in accord with the requirements of the law and good telephone practice.

Courts Cannot Fix Rates

THE Supreme Court of Minnesota, in St. Paul Book and Stationery Company *vs.* St. Paul Gas Light Company, on June 18, 1915, held that, while in a proper action the reasonableness of an established rate may be the subject of judicial investigation and adjudication, the courts are without authority to fix by injunction or otherwise the rates of public service corporations, and, that for practical reasons, the courts should not entertain suits at the instance of individual consumers to enjoin a public service corporation from putting in effect a schedule of rates which does not exceed the maximum fixed by the proper legislative body.

Commission Cannot Force Utility To Carry Out Contract

THE City of Caruthersville complained to the Missouri Public Service Commission that the Southwestern Telegraph and Telephone Company refused to pay to the city a percentage of its gross income as agreed under the terms of its franchise ordinance. The Commission on June 28, 1915, held that, while it has jurisdiction to require any utility to observe franchise requirements relating to the giving of reasonable and just rates and reasonably adequate service and facilities, there is no provision of law which authorizes it to enforce contracts except as to such regulation of rates and service and that the enforcement of other contracts and liabilities is a matter over which the courts and not the Commission have jurisdiction.

Utility Entitled to Fair and Safe Return

THE Supreme Court of Idaho, in Murray *vs.* Public Utilities Commission, decided on July 1, 1915, held, among other things, that when proceeding to fix rates the Commission must, before lowering an existing rate, find that it is unjust and unreasonable and, before raising an existing rate, must find that it is insufficient; and that the rate fixed must be fair to the consumers, but it must also be sufficient to assure to the utility a fair and safe return and to encourage rather than discourage the investment of capital in public utility enterprises.

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Back at Your Desk and Telephone

with lots of energy; lots of enthusiasm; ready for big work; eager to make the Fall and Winter seasons record-breakers in your business.

It's just the time to think over the possibilities of your telephone, to lay plans for letting it help you in your correspondence, in buying and selling —in dozens of ways that will mean a season of bigger and better business.

Why not devote a little time *today* to studying your telephone?

NEW YORK TELEPHONE COMPANY

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Vol. 6, No. 11 NOVEMBER, 1915

The TELEPHONE REVIEW

THEODORE N. VAIL

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ITALIAN TELEPHONE OUTPOST IN THE SNOW-CAPPED ALPS

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The TELEPHONE REVIEW

VOLUME·6· NUMBER·11

NEW YORK
NOVEMBER
1915

The TELEPHONE REVIEW
J. D. NEWMAN, Editor.

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THE fullest expression that has been given of the meaning and significance of the marvelous achievement of wireless telephony is probably contained in the following words, addressed by Mr. Vail in a telegram to Mr. Carty on the day of the successful demonstration:

"Your work has indeed brought us one long step nearer our 'ideal'—a 'universal service.'"

As employees of the Bell System we are all familiar with what may be termed the creed of the Company, "One Policy, One System, Universal Service," but have not most of us come to regard this as a definite statement of our present state of near-perfection, a strong and forceful advertising slogan, a terse and comprehensive definition of what the Bell System stands for from day to day—and no more? All this is true, but it is the least of all the words stand for. The sum and substance of what they do stand for is embodied in Mr. Vail's one word, "our 'ideal.'"

An ideal is something that is ever before and beyond us, but toward which we are constantly striving. It is never attained, for as soon as we approach it, new vistas appear, new dreams are born. The ideal is the loadstone of the imagination which lifts us out of the actual toward the possible, and lays hold on the supernatural. Through this constantly recurring process, laws of nature have become known, and what before seemed supernatural becomes commonplace.

HOW soon wireless telephony will become commonplace and what will be the next stage of the development of the science of telephony which Mr. Carty and his assistants will attain, are not so important for us to know as how we can perform our parts in placing these wonderful inventions at the service of mankind. For in this work we all have our part, and this task alone is enough to make life great.

We are proud that the men who have done these great things are Americans—that they did it in America, and that in a great and noble way, through the arts of peace and the progress of science, America is fulfilling her part as the Big Brother of the World.

We know that there is glory enough in this for every one of us, but with the ideal of universal service before us, our humblest duties may be made so important, by the way in which we perform them, that through our individual efforts the attainment of the ideal will be hastened.

In the beautiful tribute which Col. George Harvey, editor of the *North American Review*, paid to James Whitcomb Riley on the recent anniversary of the poet's birth, he said:

"There lives in every normal human nature a divine quality which takes the form of hunger to create—not merely to achieve, but to originate, to bring into actual being."

We do not need to be a Riley or a Carty to have this hunger, nor need we write poetry or invent wireless telephony "to originate, to bring into actual being," something within the sphere of our own efforts which will be of benefit to all.

If we do our part, the rest will take care of itself.

UNIVERSAL service means a universal system in universal use. This is our ideal.

The engineers of the Bell system, by their inspiration and genius, are rapidly devising new means to extend the possibilities for a more universal system; the Plant forces have the responsibility for placing the system at the disposal of the Traffic forces, who in their turn employ it at the command of the public with whom the Commercial forces conduct the business relations of the Bell System, and the Accounting forces, with their obvious and responsible duties, are an equally essential part of the system. Throughout the entire system there is not an individual who is not charged with a responsible duty, and the temper with which we go about our work, the pride we take in it, and the results we accomplish, have a very important bearing upon the attainment of the ultimate ideal. It is comforting and encouraging to all earnest, ambitious workers in all fields of endeavor to remember the thought which was expressed by a medieval French poet and philosopher, translated as follows:

> The greater part of mankind, in aiming at a certain end, are more capable of one great effort than of continual perseverance. Their sloth or unsteadiness causes them to lose the fruit of the best beginnings. They often allow themselves to be passed by those who have started on their journey long after them, and who advance slowly but steadily.

There are about 9,000,000 Bell telephones in the United States, and it is as much a part of realizing our ideal, universal service, to increase the use that is made of these 9,000,000 telephones and to add to their number, as it is to increase the talking distance by telephone.

We can leave to Mr. Carty and his assistants their part in the attainment of the ideal of universal service with absolute confidence in the results, but are we equally sure of the humbler part which each of us is called upon to play?

A Telephone to Unlock Doors

A SALESGIRL was delayed by a customer at the closing hour of a certain store in Albany, not long ago, and when she finally was able to go for her wraps and reach the doors, the store was securely locked.

Mr. H. H. Nicholson, traveling auditor, Hudson Division, calls the incident to the attention of THE TELEPHONE REVIEW readers, as "a further proof of the value of the telephone during pressing necessity." For the girl, discovering her predicament, wasted no time in needless alarm. She went to a telephone and

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our operator heard a voice saying, calmly enough, "Central, what shall I do? I'm locked in and have no way to get out." The police were called, the assistant manager of the store was finally located, and the girl liberated from the store before the evening had fairly begun.

Since there was telephone service in the store, the situation was at no time serious, although it was only the presence of the telephone that prevented it from being, at least, extremely unpleasant. We may imagine that one other person besides the girl was fervently thankful for the telephone equipment of the store —the person who locked up for the night without making sure the store was empty!

Bell Service As It Is

MISS HELEN B. MACDONALD, of the Kingston central office, tells of a difficulty which she straightened out for a Kingston subscriber. Not the kind of service that is supposedly contracted for, but the kind the real Bell spirit gives—the human, lend-a-hand kind of service.

At 2.47 A.M., on answering a signal, Miss MacDonald received no response, but over the line she heard a great racket and stamping. "In order to attract someone's attention I put the howler on the line, but the noise did not stop," says Miss MacDonald. "I then notified Police Headquarters that I thought there was a horse loose, and in his wanderings he had evidently knocked the receiver off the hook." The line is listed as a livery establishment and, sure enough, Miss MacDonald's diagnosis was correct. In a few minutes a call came from the subscriber thanking her for the action she had taken.

How Government Ownership Works in the United States

"THE United States Government controls the Alaska cable. I sent a 10-word message—or tried to send it—from Ketchikan to Seattle. The rate was 19 cents a word for a distance of 600 miles. I paid $1.90 and 1 cent tax on a government-line message. When I got to Seattle, three days later, the message had not arrived and I took no little satisfaction in sending a 50-word night message by the Western Union from Seattle to New York, a distance of 3,200 miles, for $1 (1 cent for tax added), and finding that this was delivered within a few hours."

This trenchant commentary on government ownership, by John A. Sleicher, in *Leslie's*, hardly needs a word of setting, but there is just one more peg to drive: Nothing speaks so strongly as experience.

Business Men Want the Telephone Voice

IN developing "the telephone voice" telephone employees have given something of incalculable value to the business world. The following letter from the manager of the New York agency of the Massachusetts Mutual Life Insurance Company proves that the day is past when the "telephone voice" is sought by telephone people only:

I have read your advertisements about the telephone voice and I have tried to get the clerks in my office to learn the telephone voice, but they do not seem to be able to grasp what I mean. Would you kindly advise me if there is any department in your Company to which I could send one or two of my clerks to learn the telephone voice, which I consider most important in business?

Thanking you for your early reply, I am,
Very truly yours,
T. R. FELL.

The Master Time Saver

THANKS to the telephone, a factory was saved from destruction by fire the other day when a lady on the heights above Hoboken looked down and saw a large building nearly enveloped in flames, to which no one seemed to be paying any attention. She telephoned to Fire Headquarters and gave the location of the fire. Headquarters telephoned that branch of the Department nearest the place described, but the station did not know of any fire in the vicinity. On investigation they discovered the whole top story of the factory in flames. They were not too late, however, to save the rest of the building.

Whether the lady's perseverance would have been equal to the situation if she had not had the quick and easy means of communicating by telephone is extremely doubtful, for she might well have concluded that, of course, she would not be the only one to see the fire, and others would surely take action. But it is not a matter of question that the telephone alone could give the speed that was the only means of saving the building. Not only in bringing the report quickly, but in determining the location of the fire and getting the engines there, time had to be saved, and the telephone is the master hand at saving time.

A. R. ALBRECHTSON,
Plant Department, Manhattan, Bronx, Westchester.

Here's Proof

THAT "selling by telephone" is "proving in" with progressive merchants in Westchester is evidenced by the following case:

The J. M. Simpson Company of Mount Vernon was interested last spring in this method of selling and after a trial extending over a period of six months proved to themselves that this is the most satisfactory and economical method of securing business.

They found that a very small percentage of their orders was secured by their patrons' personal visits to the store and accordingly they have given up the store and advised their patrons who are telephone subscribers to continue ordering by telephone.

Surely this is proof that business can be increased by encouraging telephone orders, and that this eventually means a saving to both the merchant and customer.

A. V. SEDGWICK,
Special Agent, Advertising Department.

"We are not sent into this world to do anything into which we cannot put our hearts. We have certain work to do for our bread, and that is to be done strenuously; other work to do for our delight, and that is to be done heartily; neither is to be done by halves or shifts, but with the will; and what is not worth this effort is not to be done at all."

THE ADVERTISING AND PUBLICITY STAFF, NEW YORK TELEPHONE COMPANY

Seated (left to right) J. D. Newman, Editor of The Telephone Review; H. P. Miller, Division Sub-License Manager, Hudson; R. S. Scarburgh, Advertising Manager, New York Telephone Company; F. B. Ellis, Directory Manager; A. Messe, Division Advertising Manager, Central.

Standing (left to right) W. E. Johnson, Special Agent; H. W. Casler, Division Advertising Manager, Metropolitan; P. W. Eldridge, Directory Advertising Manager; G. W. Billings, Division Advertising Manager, Western; H. G. Stokes, Manager Copy Department.

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Wireless Telephone to Paris

Great Scientific Achievement of Bell System in Transmitting Speech Electrically Across the Atlantic Ocean—Paris and Honolulu Hear Simultaneously Nine Thousand Miles Apart—Successful Tests Also to Darien, San Diego, and Mare Island

ON October 21, the first announcement was made of the conquest of the air toward the east and that from Arlington, Va., to Paris, France, the spoken word had flown and the voice of a man had been distinctly heard and recognized by friends and coworkers surrounded by officers of the French Government 3,800 miles away upon a foreign shore. Simultaneously with the hearing in Paris of the voice of the speaker in Arlington, it was heard in far-off Hawaii, 4,900 miles to the west, and if the watchers at Mare Island, San Diego, and Darien were listening, they, too, heard.

To describe this marvelous conception and wonderful achievement requires words which lead the mind to see visions and dream dreams. Limitless possibilities for communication by telephone among all peoples and languages are beginning to be realized.

FOR several weeks the word had been anxiously awaited that the messages which were being sent out from Arlington at every opportunity were being received in Paris. But days passed without result; then a report came that snatches of words were heard, followed by days of silence again. On October 12, however, a perfect test was made, and the voice of Mr. B. B. Webb at Arlington was distinctly heard by Mr. H. E. Shreeve and Mr. A. M. Curtis at the Eiffel Tower receiving station in Paris, where there were also assembled representatives of the French Government. On the following day again, the same result was achieved, only to be followed once more by days of silence. Sufficient confirmation was obtained by October 21, however, to justify the formal and official announcement that Paris had been reached by wireless telephone from Arlington.

Talking to Honolulu, 4,900 miles from Arlington, official announcement of which was made on September 29, was much more wonderful than talking to Paris, but it did not seem to fire the imagination quite so much, or arouse the enthusiasm of the public to such a high degree as the latter has done. Any of the messages sent from Arlington and received at Honolulu could have been heard over the shorter distance to Paris but for the disturbed conditions in Europe due to the war, and the unusual static conditions of the atmosphere. Indeed, were it not for the conditions of war existing in Europe, the accomplishment of transatlantic wireless telephony would undoubtedly have preceded the much more difficult feat of transmission to Honolulu. It is beyond question that when the warring nations cease their slaughter and peace again returns, the extension of wireless telephone communication between America and all the capitals of Europe will be established, for Petrograd, the most distant, is nearer than Honolulu.

WHEN word was received on October 21 of the successful transmission to Paris, Mr. Vail and Mr. U. N. Bethell were at the Grand Canyon, Ariz., on their way east from California, and Mr. Vail immediately issued the following statement:

The talk from Washington this morning heard both in Paris and Honolulu is but an amplification of the talk previously had between New York and San Francisco, via Washington, which was heard at Honolulu, and many other wireless stations. It establishes as a fact that under favorable atmospheric and electrical conditions, with proper equipment which the engineers of the American Telephone and Telegraph Company have developed, we will be able to carry on conversation between New York and European points as well as to the Western Coast and points across the Pacific Ocean.

BELL WIRELESS TELEPHONE SUCCESSFULLY DEMONSTRATED
SEPTEMBER 29, 1915

American Telephone & Telegraph Company Officials present at 15 Dey Street—Mr. THEODORE N. VAIL, President, seated. Standing (left to right)—Messrs. BANCROFT GHERARDI, Engineer of Plant; UNION N. BETHELL, Senior Vice-President; F. A. STEVENSON, General Superintendent of Plant; K. W. WATERSON, Engineer of Traffic; W. MURRAY CRANE, Director; O. B. BLACKWELL, Engineer; JOHN I. WATERBURY, Director; H. P. CHARLESWORTH, Engineer; H. CHRISTOPHER, Special Wire Man, New York Telephone Company. The Speakers Were: Mr. Vail, Mr. Bethell, Mr. Waterbury, Mr. Gherardi, and Mr. Charlesworth.

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In a statement made by Mr. Carty by telephone from Chicago that night, he stated that "We feel that the problem of talking around the world is really accomplished; that is, we know we can do it." He explained that there is a lot of hard work ahead of us yet, but "we have proved that we can do it."

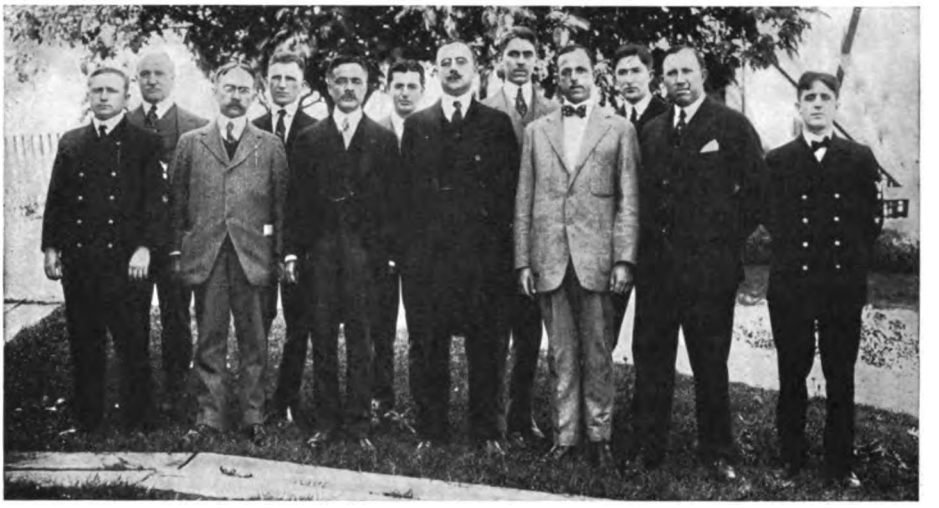
That is the kind of talk from Mr. Carty which makes him such an inspiration and leader. He refused to say how soon it would be done, but he knows that with his confidence in them, the men under his direction will be no laggards. The work which has been performed by the forces of the American Telephone and Telegraph Co. working upon these problems is an earnest which the whole world may accept of the achievements that are yet to come.

THE question of radio communication had long been in the mind of Mr. Carty and the engineers of the American Telephone and Telegraph Company and the Western Electric Company, but was considered subordinate to the immediate work in hand, of perfecting and extending the wire system.

Early in the present year an experimental sending station was constructed at Montauk Point, Long Island, by Bell engineers. A wireless tower on the roof of the DuPont Building in Wilmington, Del., was borrowed by courtesy of the owners, and to this tower the Bell engineers constructed experimental receiving apparatus. This gave a talking distance of about 250 miles.

At Montauk Point the antenna consisted of a span of six wires about 600 feet long between two steel towers 160 feet high. The receiving station at Wilmington consisted of a building antenna with a span of about 200 feet between 60-foot poles on the top of the DuPont Building.

The next step was a talking distance of about 1,000 miles between our experimental tower at Montauk Point and the experimental tower which we erected for the purpose at St. Simon's Island, on the southern coast of Georgia. The antenna at St. Simon's Island was about 1,000 feet long on wooden poles about 120 feet high. During the course of these tests, in addition to sending wireless telephone talks from Montauk Point to St. Simon's Island, talks partly by wire and partly by wireless were carried on successfully. The most noteworthy achievement of these early experiments was that of talking from an ordinary desk stand in New York by wire to Montauk Point, thence by wireless to St. Simon's Island, and thence back to New York by wire to another desk stand in another room of the same building from which the messages were sent.



GROUP AT MARE ISLAND

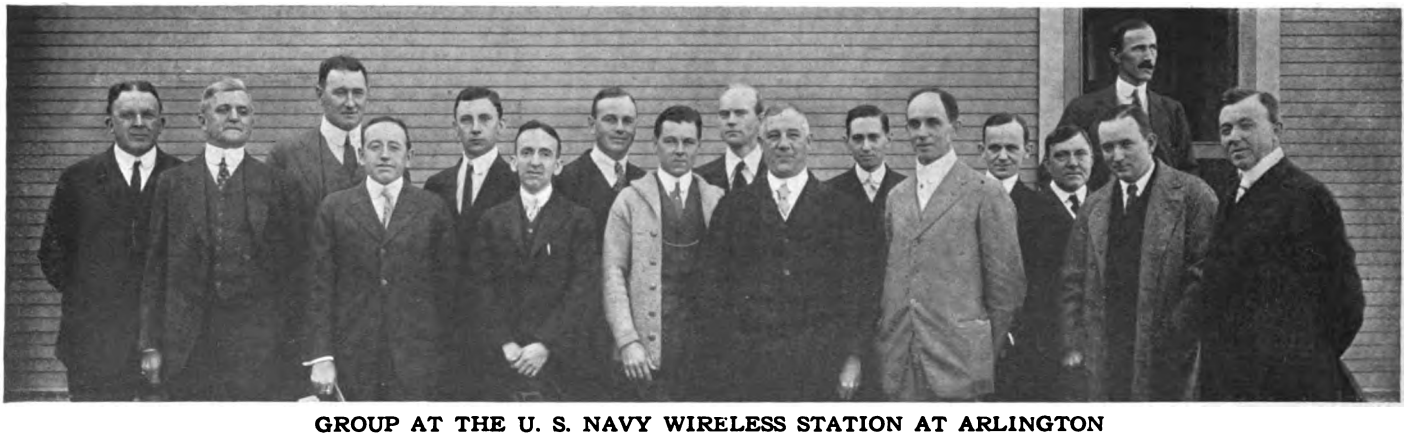
From a photograph taken at the Mare Island Navy Yard near San Francisco, California, on September 29, 1915, after the first transcontinental wireless telephone demonstration from New York and Washington.

John J. Carty, Chief Engineer of the American Telephone and Telegraph Company, under whose direction the successful wireless telephone apparatus was developed, is surrounded by the navy officers and telephone men who witnessed the demonstration at the Western end.

(From left to right)—Chief Electrician PETERSON, U. S. Navy; Mr. J. C. MARRIOTT, Official Stenographer; Mr. A. H. BABCOCK, Consulting Engineer, Southern Pacific Co.; Mr. H. U. LINKINS, The Pacific Telephone and Telegraph Company; Mr. J. J. CARTY, Chief Engineer, A. T. & T. Co.; Mr. H. H. HAMLEN, A. T. & T. Co.; Lieut.-Commander G. C. SWEET, U. S. N.; Mr. R. L. SHAW, The Pacific Telephone & Telegraph Company; Mr. H. D. ARNOLD, Western Electric Co.; Mr. R. L. HARTLEY, Western Electric Co.; Mr. A. H. GRISWOLD, Engineer Outside Plant, The Pacific Telephone and Telegraph Company; Chief Wireless Operator SMITH, U. S. N.

Such results proved conclusively the correctness of the theories upon which the Bell engineers were working and gave assurances of possibilities embracing transatlantic and transpacific wireless telephony. The practical value of wireless telephony was also revealed in the ability which had been demonstrated to make it supplementary or auxiliary to the wire system. The ability to interconnect wire and wireless telephone systems is of the greatest importance in the proper working out of the application of wireless telephony.

These early talks furnished not only the experience and information needed



GROUP AT THE U. S. NAVY WIRELESS STATION AT ARLINGTON

(Left to Right)—P. G. BURTON and J. E. BOISSEAU, C. & P. Telephone Co.; Col. SAMUEL REBER, in charge of Aerial Signal Service U. S. A.; Lt. Com. S. E. HOOPER, U. S. N.; R. A. HEISING, W. E. Co.; W. H. SCHOTT, A. T. & T. Co.; Lt. BASTEDO, U. S. N.; Lt. R. B. COFFMAN, U. S. N.; JOHN MILLS, A. T. & T. Co.; Capt. W. H. G. BULLARD, U. S. N., Supt. U. S. Radio Service; W. H. EVERETT, W. E. Co.; F. B. JEWETT, Asst. Chief Engineer, W. E. Co; Lt. Com. S. W. BRYANT, U. S. N.; H. H. PECHIN, Official Stenographer; JOHN KIRBY (front), Newspaper Reporter; J. W. GEORGE (back), A. T. & T. Co.; E. H. COLPITTS, W. E. Co.

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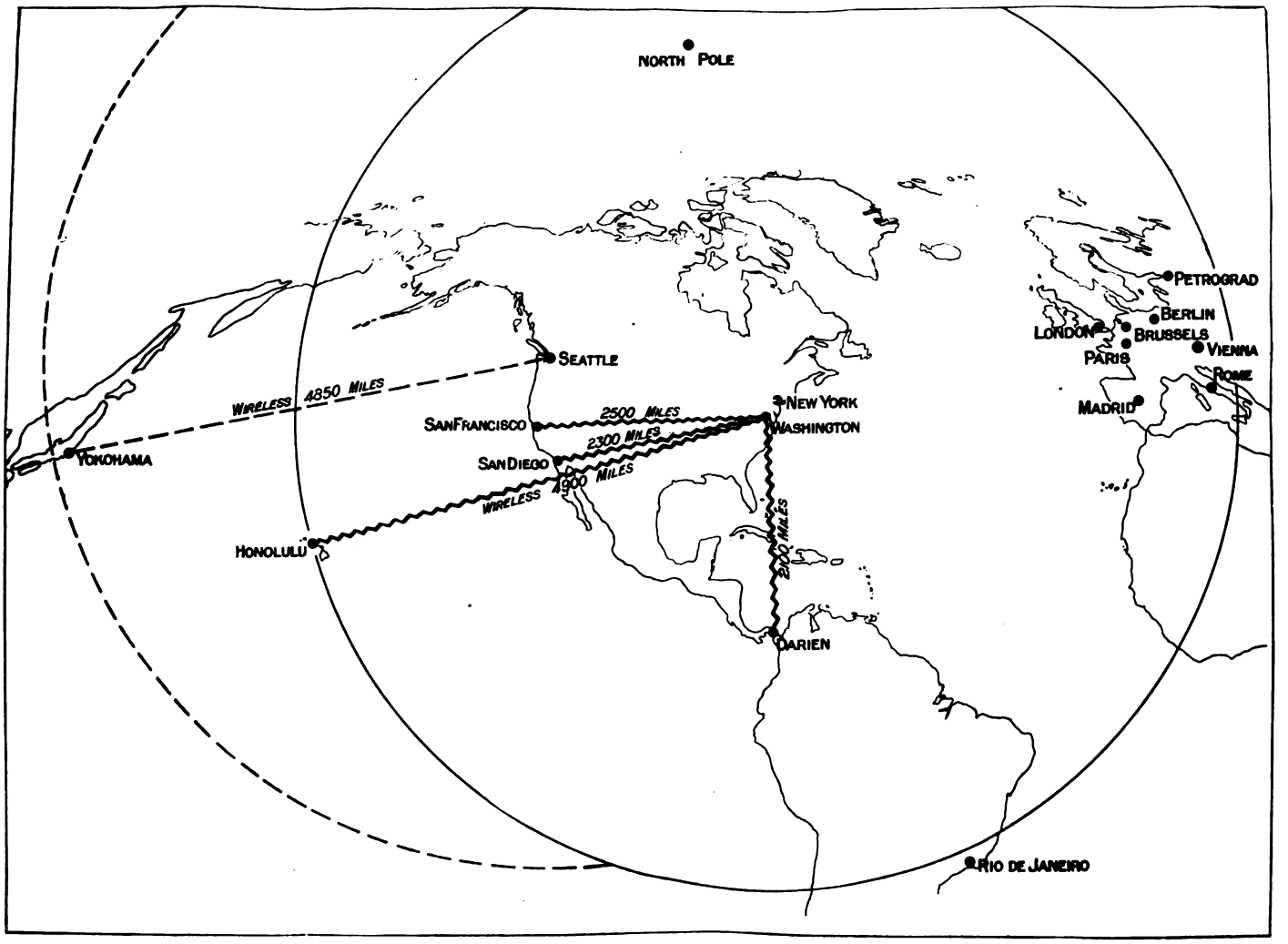

WHERE THE BELL WIRELESS TELEPHONE REACHES

The main circle shows the territory within a radius from Washington of 4,900 miles, the distance from Washington to Honolulu, which was reached by a Bell wireless telephone message, September 29, 1915. The same message could have been heard at a properly equipped radio tower at any point within the circle. The dotted circle of equal radius shows that a telephone message from a wireless station at Seattle could be heard at Yokohama. Paris was reached October 21, and the message was heard simultaneously at Honolulu.

for larger experiments in wireless telephony, but also established a record for distance far in excess of anything previously reported or claimed.

The next step was to extend the talking distance. So much had been accomplished in the creation and construction of the sending and receiving apparatus which were evolved out of the studies and experiments of the Bell engineers, that the Navy Department at Washington was approached, and through the courtesy of the officers in charge of radio service, a number of Navy Department antennæ were placed at our disposal for limited use in further development and demonstration.

The French Government was also approached for permission to use the Eiffel Tower in Paris, and notwithstanding the present war conditions in Europe and the consequent incessant use for war purposes of this important wireless receiving station, consent was given at once, demonstrating the great interest and courtesy on the part of the French Government which have been of such inestimable value to the Bell System in its experiments.

Work was immediately begun on the erection of the building at Arlington to serve as a sending station, and the Research Branch of the Bell System commenced the construction of the sending apparatus and the numerous receiving sets which were needed. This required the training of men in the art of manufacturing the necessary apparatus, and after that each part had to be developed and completed in its entirety. There were no precedents to follow except such as were made in the experiments between Montauk Point and Wilmington and St. Simon's Island, and the Bell engineers worked day and night in their laboratories, workrooms, and at Arlington, on their problems.

By early summer of the present year sufficient progress had been made for men to be dispatched with receiving equipment to be installed at the naval radio stations where experiments were to be conducted, and to Paris.

From the Research Branch of the Western Electric Company Mr. W. Wilson was sent to San Diego, Mr. R. L. Hartley and Mr. H. D. Arnold to Mare Island, and Mr. R. H. Wilson to Darien; and Mr. Lloyd Espenschied, of the American Telephone and Telegraph Company Engineering Department, started for Honolulu. Two men were also sent from the Research Branch of the Western Electric Company to Paris, Mr. H. E. Shreeve and Mr. A. M. Curtis, and the Bell wireless telephone receiving apparatus was installed in connection with the Eiffel Tower. Two men went to Arlington, Mr. R. A. Heising and Mr. B. B. Webb.

From Washington the distances are—to Honolulu, 4,900 miles; to San Francisco, 2,500 miles; to San Diego, 2,300 miles; to Darien, which is in the Panama Canal Zone, 2,100 miles; to Paris, 3,800 miles.

As soon as these men reached their destinations, the work was begun of installing the Bell wireless telephone receiving apparatus in connection with the radio station at each point, and by the time this work was completed, Mr.

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John Mills, Mr. R. A. Heising, and the other engineers from the Research Branch of the Bell System had the apparatus at Arlington ready for preliminary trials.

The naval tower at Arlington which was to be used for sending purposes is known to be one of only moderate capacity, having been constructed many years ago. It consists of three steel towers at the corners of an equilateral triangle about 350 feet on a side; two of these towers are 450 feet high, and the third is 650 feet high. The antenna is of triangular form and the wires connecting the three towers have in each span a spread of about 80 feet.

At Honolulu it was found necessary for the American Telephone and Telegraph Company engineers to construct their own tower for the purposes of these tests. This was hastily done. It consisted of a span of wires about 250 feet long connecting the top of a smokestack 100 feet high with the top of a water tank 80 feet high. The connection from the end of the antenna to the operating room was from the top of the smokestack to a pole 30 feet high just outside of the operating room and about 400 feet distant from the stack and approximately at right angles to the span. This very inferior and hastily constructed equipment was all that was available for the epoch-making tests which were about to be made, so that the final results were all the more remarkable.

SENDING apparatus was installed only at Arlington, and as the naval radio station there could be used only at such times as would not conflict with government business, no continuous experimentation was possible. This was equally true of the naval radio stations at Mare Island, San Diego, and Darien, but it was true in a much greater degree of the Eiffel Tower. Whenever possible, the receiving stations were notified of the time the sending experiments would be made, but there was no way of knowing whether any of them were listening, except Honolulu, where Mr. Espenschied was always on the *qui vive* at his improvised station.

Again, the conditions of the atmosphere through which the messages had to pass to reach their destination might be favorable or unfavorable.

The natural result was that sometimes none, sometimes one or another, and sometimes all the receiving stations except Paris heard the messages sent out from Arlington.

Gradually difficulties were overcome, and more or less regular tests were made with the different stations. Early in September Darien was being reached regularly, followed shortly by San Diego and Mare Island. Owing to the much greater distance and the very small receiving antenna, results at Honolulu were not so satisfactory. Paris had not been heard from.

Two thousand five hundred miles was a certainty, however, and as sending across land is far more difficult than across water, Mr. Carty and his engineers decided to make a formal trial and demonstration of transcontinental wireless telephony at a fixed date and hour. For this purpose September 29 was decided upon as the date, and high noon Eastern time, 9 A.M. Pacific time, as the hour.

In his office at 15 Dey street, New York, Mr. Theodore N. Vail, President of the American Telephone and Telegraph Company, lifted the receiver of his desk stand and spoke into the transmitter saying:

"Hello, Mr. Carty; this is Mr. Vail."

Instantly through the receiver he heard Mr. Carty say:

"This is fine; this is wonderful."

Mr. Vail's words had traveled over the long distance line from New York to Arlington, where the slight and almost imperceptible vibrations created by his voice, passing through the Bell wireless telephone apparatus, started the electric currents of tremendous horse-power which were surging in the antenna and which carried his greeting not only to Mr. Carty listening at the wireless telephone receiving station at Mare Island, Cal., but beyond. Mr. Carty replied to it over the Transcontinental Telephone Line, and telegrams came at once from San Diego and Darien saying they had heard it also, and fast as a cablegram could travel from Honolulu came a message from Lloyd Espenschied that 2,400 miles beyond San Francisco, he too had heard it—double the distance from Washington to San Francisco!

THE method by which this was accomplished is the secret of the Bell engineers, which they have imparted to the Government, but what was accomplished may be described as follows:

The voice spoken into an ordinary telephone transmitter sets up vibrations in the electric current flowing over the line, which "vary in intensity precisely as the air varies in density during the production of a sound," and these vibrations traveling through the Bell wireless telephone apparatus at the sending station, set up the same vibrations in the tremendous electric currents sent out from the antenna of the radio tower, and these vibrations traveling upon the ether which envelops the earth, are transformed at the Bell wireless receiving stations into the identical sounds which created them.

STILL no word came that any of the wireless telephone messages from Arlington had reached Paris, where Mr. H. E. Shreeve and Mr. A. M. Curtis were "listening in" whenever the French Government found an opportunity to give them the use of the Eiffel Tower. This was not considered strange, however, for since the messages reached Honolulu, they would have been heard also at every receiving station within an equal radius of 4,900 miles from Washington if atmospheric conditions had not been unfavorable.

But on October 21 official announcement was made that the tests to Paris were successful and Mr. Shreeve and representatives of the French Government not only heard Mr. B. B. Webb talking, but Mr. Shreeve recognized Mr. Webb's voice.

THE farthest distance the voice has been heard is 4,900 miles, which is the space between Arlington and Honolulu, but how much farther the voice has traveled through space there is as yet no way of knowing. Already speech may have girdled the globe.

There are still problems of great magnitude which will be solved in time, but in the meanwhile this wonderful achievement has placed at the service of the world a medium of communication to places which cannot be reached by wire that far transcends in importance the power of the human mind to conceive.

REGARDING the usefulness of the wireless, Mr. Vail says:

"It is clear that wireless will never substitute or supplant the wire systems but will greatly amplify them and extend their usefulness. It is humanitarian rather than commercial, but it is useful in that it makes conversation possible between places, and between places and moving objects, and between moving objects that could not be connected by wire."

Die to Live

IT takes a Middle West or Far West town to do things dramatically. Take Chanute, Kan., as an example. Chanute is in the oil strip of the State. The sum and substance of the story about Chanute is that in order to make the town live its citizens must die. A paradox? Yes. But figures will explain.

The town has a municipal water works, a municipal electric plant, a municipal gas plant, and a municipal cemetery. The finance committee recently completed footing up its accounts, and found that for the three months ended June 30 there was a deficit in every department except in the cemetery. That was ahead. It had made a profit.

The report does not say so, but there is only one logical conclusion. At the rate at which the town has been going the only way for it to break even is for its citizens to die and be buried in the municipal cemetery. Whether civic pride will go this far remains to be seen, and the country will watch the result with interest.—*Richmond Times-Dispatch.*

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Some Observations on Modern Tendencies

An Address at a Dinner Given By the Railroad Commission of California to the National Association of Railway Commissioners, San Francisco, October 13, 1915

By Theodore N. Vail, President American Telephone and Telegraph Company

Mr. President, Commissioners, and Guests:

IT is indeed a great honor to have been asked to meet with you to-night, and a far greater to have been asked to speak to you.

You have in your various official capacities the most momentous problems of the present to consider and to solve. Upon your action will depend not only the continuance and initiation of vast enterprises, but the very existence of vast wealth shared by millions of people. The well-being of all will be greatly increased or greatly diminished by your decisions and your acts.

No solution can be absolute; no human is omniscient; but in the composite wisdom, experience, and common sense of all, there will certainly be found a basis, a course to follow, which will maintain such existing conditions as are good without putting the brakes upon progress.

To-night we will try to state these conditions; to examine the causes which have produced them; and, if possible, to indicate a course of action for the future.

You will hear nothing novel or startling, only statements of fact about which there can be little dispute, and certain precepts which have stood the test of time.

There never was in our country a stronger, better, underlying basic condition, or one more potential for good than that which exists to-day. There should be certainty and stability in our economic condition; instead, there is uncertainty and doubt.

Instead of a settled and definite course of action there is a chaos of confused and continually changing thought.

As a consequence of perpetual striving for personal aggrandizement rather than for substantial public benefit, clear, well-defined economic, social, and political policies are not being proposed for discussion and adoption, but are submerged by all sorts of fads, fancies and vagaries seriously advanced as cure-alls for every possible condition.

To just what extent this state of affairs will be carried, just what may be the outcome, just how far it will result in the disturbance or disintegration of basic and fundamental principles, is difficult to determine.

There is danger, grave danger, but offsetting this danger is the well-founded hope that when seriously aroused, the American people will bring into action that common sense of which they are possessed, and avert catastrophe.

The great majority, so long as they are comfortable, are indifferent to disturbances; but when disturbances become so serious as to endanger individual comfort they arouse themselves, act with intelligence, straighten out affairs, and again sink into repose and soon forget that there was trouble.

While probably there never have been much worse, there have been similar disturbances. Let us make a thorough diagnosis of the disease and try to find the cure.

Controlling Conditions

In all consideration of economic questions, actually existing conditions should be assumed to control. Past experience is a dependable guide so long as it applies to continuing or similar conditions. There is a tendency to ignore the past and the present, and set up as a basis quasi ideal conditions which have no existence. While ideal conditions are much to be desired, until they are established, the closer we keep in our minds the actual conditions the greater is the possibility of improvement. Obstacles and difficulties cannot be ignored. Reform can only be accomplished by the coördinated effort of all, acting upon a correct understanding of real conditions.

There is a vast difference of opinion to-day as to what *are* the actualities. There are few mental visions capable of taking that comprehensive view of the whole field which is essential to success in social or political reform.

Disputable speculations and assertions as to what is, or what will be—which appeal to human generosity or selfishness—are apt to be more controlling than any presentation of actualities which may be unpleasant and obstructive. Obstructive conditions must be overcome by effort, whereas *hypothetical* difficulties can be dissipated by a change in phrasing or by an effort of the imagination. *Promise* can always eclipse *performance*. Performance never will equal irresponsible promise or prediction. Everyone knows the fate of him who tells the first fish story.

The Human Factor

The past shows us that better social conditions are but evolutions, and have ever closely coincided with material progress. Whether or not material progress is the cause or only a potent influence may be debatable, but history seems to indicate that it is the advance agent.

Individual action is the most unsettling factor of human progress; it fluctuates between the extremes of perfection and imperfection. It is controlled and influenced by habit, education, environment, temperament, and passion; always generous and noble when influenced by known suffering, it may be absolutely selfish when influenced by material possessions or individual comfort. There is a vast difference in "openness to conviction" of various individuals under similar influences. What course of action individuals will take under any given condition, or any given influence, it is impossible to say.

That one has been right in any matter is far from conclusive that he may be right in other matters. It is seldom that any individual who has succeeded in one line will succeed in other and dissimilar lines. Confidence in an individual because of some single success has caused many disappointments. There exists a strong tendency to place absolute confidence in some one individual, to make him the repository of confidence, and in social, economic, or political matters, that individual is, for his group or his party, the dominant, powerful intellect; and to him individuals dominant in other things—leaders of reputation and experience—subordinate their own personalities; whatever he may advocate is accepted without question. This supremacy may be well deserved and worthy the following; it may be only some strange fascination or some appeal to imagination. This power may be used for a worthy purpose which, when accomplished, is of general benefit, or it may be used for a purpose, too large, involved, and complicated for a leader, who, though having the imagination to conceive great things, has not the patience and ability to carry them to accomplishment. Before his followers realize his mistakes he may become so entangled, and he may have so entangled them, that the cause is lost and all have become involved in a maze of disastrous perplexities.

Or, the purpose he advocates may be false in principle, impossible yet plausible, but even after his followers have lost confidence, and failure is evident, they hesitate and are loath to assert themselves; some will not see, some will

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be held by a sense of personal loyalty, and some will selfishly hope for some individual benefit.

Greater disaster has been brought about, more characters have been smirched, by blind confidence in individuals, than there have ever been through intentional deceit or fraud.

This phase of human character must be taken into account, for it explains many events in life otherwise not possible to understand. These peculiarities account for many fundamental differences of opinion on vital questions upon which each enthusiast thinks that there should be no honest difference and that all are wrong who differ.

There always will be honest differences of opinion and the only way to reach a workable condition of human affairs is by an "understanding" reached through discussion, and a "conclusion" reached through mutual concession. In this way a course of action will be determined in which all can acquiesce and toward which all can work in a spirit of hearty accord for a common purpose. While the conclusions may not be the very best—who can tell!—there is no question but that it will be the best that can be obtained.

Emotional movements are not permanent, nor are they stepping-stones to something better, for they are not based on any mental quality that leads to improvement.

It is easy to say but impossible to prove what "would have happened." Time settles definite prophetic statements, but "might-have-beens" can never be determined.

All improvements in our social relations must be based upon improvement of environment and habit of the human mind, an evolution through systematic and practical education from existing conditions.

What Are the Influences That Have Been Working for Better or Worse in Our Economic and Social Relations and Conduct?

Within a recent period, no longer than one man's lifetime, tremendous changes have taken place.

When that individual was young, man was self-dependent. With the exception of the "luxuries," the man and the family produced and fashioned nearly every article of individual or household use, and were in a great measure independent of all others. Production and manufacture were by disassociated individual work, mostly by manual labor, or if centralized were in exceedingly small groups. Intercommunication was generally confined to the neighborhood; if extended beyond it was through occasional visits, or semi-occasional letters to which exceptional importance was attached. Intercommunication, intercourse, or interchange between separate sections or States was uncommon, and between separate nations and continents almost negligible. There were a few centers of trade and commerce. Fully half of the world was substantially unknown.

What has been the change in one "recent man's" lifetime?

Now the great majority are dependent upon others for the comforts, conveniences, and necessities of life. Extreme parts of the country are now in closer connection than were neighborhoods; personal intercourse between individuals widely separated are but everyday occurrences. The food upon the table is brought from distant lands, seas, and forests.

Instead of disassociated manual labor, labor is now centralized in vast establishments where machinery has largely replaced manual labor. On the farm the raw material and produce is exchanged for the necessities of life manufactured elsewhere. The trolley car passes your door, and frequent and swift trains or traveling hotels are convenient for customary journeys between distant towns. For intercommunication the mails are frequent. For immediate communication the telegraph annihilates distance, and for social or business conversation, whether with those in an adjoining house or distant city, the telephone makes personal intercourse possible.

The changes in habits, customs, and conventions of our social organization have been greater in that "recent man's" life than in any previous thousand years.

Everything or nearly everything which contributed to these new, if not better conditions, was introduced as luxury, soon became convenience, and almost imperceptibly became necessity.

That which contributed most largely toward these changes, and without which they would be impossible, is "intercommunication" and "transportation."

Intercommunication and transportation, cheap and efficient, have made possible the enjoyment of the world's products in every section and the assembling of raw material from widely separated sections at the most favorable point for manufacture and distribution; have made possible transactions and intercourse between all parts of the world. It is now easier to arrange matters between individuals widely scattered than formerly between those in the same community. As intercommunication and transportation develop, so develop commerce and society.

What Has Been the Effect of These Changes?

The wealth of our country has been created by and is absolutely dependent upon these facilities; without them it would disappear. "Transportation and intercommunication change local stagnation to world-wide prosperity." Transportation and intercommunication have created, and upon their continuance depend, the populous and prosperous commercial and social centers. All other public services are subordinate to these.

Wherever man lives, in city or country, he is dependent; he must be served.

In the beginning these services were hailed and welcomed as "beneficial advantages," soon they were regarded as "dependencies" of public favor and, as public dependence upon them increased, they were regarded more from the point of self-interest; and narrow consideration became prominent in all dealings with them.

This attitude was no new characteristic. Society has never allowed that which is necessary to existence to be entirely controlled by private interest. It has always been brought under sufficient control and regulation to prevent extortion or oppression, without destroying the conventional rights of property, which were additionally safeguarded, by its character, its small investment, its adaptability to other purposes.

The construction and equipment of present day utilities requires large "unrecallable" investment in special plant and equipment which has little or no liquidating value as a going concern of the same nature, and without equitable treatment there must be great loss.

These public services, to obtain the maximum benefit at the minimum cost, necessarily assumed the nature and many of the characteristics of "monopolies." This was made an excuse for the enactment of restraining laws, and it made the public services too frequently the target of misrepresentation and at times of veritable persecution which might be brutally described in the expression "might makes right."

The regrettable trouble, the greatest danger of all, *is the lack of a proper recognition of the close interdependent relations between the prosperity of these utilities and the prosperity of the public.*

Reckless methods of promotion, and disregard of public rights by *some* of the *many* connected with these utilities, have antagonized the public and created the idea that the practices of a few were the practices of all. Some of the managers may have given too much consideration to their shareholders and too little to the public, forgetting the mutual interdependence and common interests, but there has been and there is a growing tendency to meet the public in a broad and liberal way. In many of the most marked cases of maladministration and reckless financial management the underlying purpose was to profit through the increase and improvement of facilities, and in nearly every, if not every

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instance, the public have obtained better, more extended and even cheaper services and facilities.

Much of the public misunderstanding and financial loss to the public has been through new promotions, which under the name of "competition" and the cry of "down with monopoly" duplicated in part existing utilities, covered only the profitable part of the business, and did not meet the essential "raison d'être" of a utility, which is, to afford facilities to all. Investment was increased without increasing facilities, and the power of the existing utility to extend service was lessened by dividing the profitable business.

Another and Even Greater Change Has Taken Place in the Conditions Which Control Human Progress in This Country

During this same period, or one "recent man's" lifetime, the political as well as the economical and social structure has been revolutionized. The so-called democracies in previous periods of the world were in fact nothing but aristocracies.

Our government, organized as a representative republic, had at the beginning many of the elements of an "aristocracy." Those who by birth, education, or acquisition occupied the leading positions in society had weight and influence in public as well as private affairs. This was but a continuation of the traditions and customs in the colonies and in the countries from which our ancestors came.

The change from an "aristocracy" to a real "democracy" did not take place until those earlier settlers and pioneers who subdued the wilderness, established new communities, and through suffering and privations became a self-reliant, independent people, had established such an equality as did not prevail even among the original settlers of this country.

Much that is regrettable could not have happened if the new generations of our own people and the new immigration had found the same undeveloped wilderness to overcome as did the pioneers and advance agents in the settlement of our vast territory.

Instead of a wilderness, there was a settled country and superior conditions with sufficient possibility and potentiality to give abundant opportunity to all, native or foreign born, who had the initiative or the application to take advantage of it, and abundant occupation for those who preferred less, with less exertion, or were willing to be servers rather than leaders. All can now secure, with the broadest freedom, material comforts and satisfying environments superior to any that could be had, by any effort, in olden times or in foreign homes.

The most marked changes have been:

1. Simple life to complex life.
2. Disassociated individual effort and small enterprises to centralized cooperative enterprises and aggregated labor.
3. Highly skilled manual labor to automatic machinery.
4. Apparent corporate irresponsibility dominated by a few individuals, instead of individual responsibility.
5. Disturbance of relative standards of value of long standing, caused by great discoveries of precious minerals.
6. The great increase in nominal but not relative wealth of the individual, and a greater distribution of property to the whole public through the changing of the great potential resources of the country into tangible and realizable assets by the restless and resistless energy of the inventor, the dreamer, the optimist, backed by energy, initiative, and persistency.
7. The introduction of new educational standards, which created wider and more envious distinctions between manual and intellectual pursuits, and forced the education of youth along lines which unsettled old ideas without replacing them by something as good or better, disturbing the old belief and faith in self-help and self-dependence, in industry, thrift, and accumulation, all of which created in the minds of many dissatisfaction with their own position and an antagonistic envy toward others more fortunate.

These changes have taken away from the partially educated or incompletely developed mind old and satisfying ideas, and created unrest, dissatisfaction, and a gnawing suspicion that there is some magic power which is being used against them.

Millions of immigrants, at home controlled by fear and force, with no voice except that of secret, lawless methods, with no realization of any difference between liberty and license, were cut loose from restraint imposed upon them by custom and tradition, and without education or ideas of public obligations were put on a political equality in every respect with those who by experience and generations of education were prepared for all the rights of higher citizenship.

All these discontented forces, welded into solid phalanxes of voters led by self-seeking politicians who promise the impossible, have become an influence in the politics of the country that must be reckoned with.

Their relative influences have been increased by the indifference and neglect of civic obligations by representative and leading citizens, some of them all the time, and nearly all of them some of the time, and by the stubborn, unconceding resistance of impractical enthusiasts and their followers to any movement not of their own suggestion.

If but a small part of the wrong conditions which are believed by the dissatisfied to exist, did exist, the French Reign of Terror would be as nothing to what would be possible in this country at any moment.

But in face of these assertions all know that very many of our leaders of thought or industry and of those coming forward to replace them, are but the first or second generation from toilers in the ranks.

Before any permanent change can come, the whole public must be educated up to a full realization of their civic duties and responsibilities, and all must contribute to the solution of civic problems and administration by giving generously of their individual time and effort.

Everything possible should be done to develop proper understanding and education. No matter what may be the future "uplift" or development, some conditions will never change. Food and clothing and shelter, no matter how simple, must be produced and prepared for use by labor. Transportation and intercommunication must be provided by labor. All kinds of work must be done, agreeable or disagreeable, cleanly or soiling. From the raw material to the finished product, some must bear the physical burden, some the mental, and some the financial.

There must be mutual concession and subordination of the individual to the comfort of all. There must be leaders and followers, for without organization there can be only chaos. Society must be organized and improved if possible without destroying its essential elements, or man must go back to the primitive state where each does everything for himself, or by brute strength forces someone into slavery to do it for him.

Much can be done to improve conditions and environment surrounding labor and rest, but the only way to permanently better the condition of the individual is to teach him to raise himself by his own efforts into a better position, and by thrift, economy, and intelligence in labor, and by absence of self-indulgence, earn and save enough to take care of his future.

There must exist a curator for the spirit of the law. Dishonest practices now protected by sophistries and plausible evasions must be punishable. That can be accomplished by confining the statutory laws to general rather than specific subjects. There is abundant knowledge of right and wrong, and there are laws, if enforced, and precedents, if followed, to reach all. If one uses or allows to be used a good reputation in ignorance of the purposes for which it is used, or misleads others through misrepresentation based on ignorance, it is a crime and should be so treated. Representation used for the purpose of influencing or persuading others should be based on actual knowledge and correct information.

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The whole public must be convinced that nothing gained at the expense of others can be permanently beneficial; that no advantage to individuals or groups of individuals gained by combination of interests against other individuals can be permanently beneficial; that waste and extravagance in public expenditure and administration cause higher taxes than all the graft of years. Our lawmakers instead of seeking new ways for taxation should curb reckless extravagance in public expenditure. Owners, proprietors, and corporations may pay the tax, but every tax comes from the ultimate consumer. The tax is as much a part of the cost of the production as are wages, and between the raw material and the ultimate consumer come all costs. Profit is the incentive to production; without profit progressive industry would cease, but any unnecessary expenditure or *tax* is a brake on progress and a burden upon prosperity. Taxes, high cost of material, waste, idleness, careless work, are included in the rent of the tenement. The rent is paid by the tenant.

No uplift can be permanent, no reform beneficial, without full recognition of the natural and cultivated differences in man. Some are leaders; some are dependent followers; some want restful positions; some only responsibility; some see and pluck opportunity from sterile surroundings; others may be bombarded with opportunity but accept none of it.

All should realize that if we are to live in comfort the efforts of all must fit into each other and that some concession, some give-and-take, is necessary. When all these things are done, each will find his proper place in the social organization, and all will be enabled to have their proper share in life and prosperity.

Telephone

THE broadening extension and improvement of our industrial, commercial, and utility enterprises; their application, availability, and adaptability to the wants and necessities of humanity, are due in a very large sense to the introduction of scientific and technical methods into their conception, construction, and operation.

The great profits which have been made in many industrial enterprises have not been extorted, as many believe, from the public through force of their necessities, but by giving to the public more or better at the same or less price, and by more and better being produced by the same or less physical effort on the part of labor. Some of the greatest benefits have been through the elimination or utilization of waste, or the conservation of energy.

In all industrial or constructive enterprises the technical and scientific staff and the laboratory are as essential a part of the organization as any other, and the enterprise which neglects it cannot keep pace with others that do not.

Scientists and technical experts of the highest grade, such as were formerly to be found only in the laboratories or recitation rooms of colleges and universities, are now found in the laboratories of every great industrial enterprise, opening up new fields for old things, or developing new things for fields both old and new, and extracting from waste something which will either add to or cheapen some necessity in life. This costs money and is only possible where the expense can be spread over such large production as to make the cost to each unit of production negligible. Consumption ceases when the unit cost of anything is made greater than the unit value to the consumer, and production must cease when the unit cost is made greater than the price obtainable.

In the development of the telephone, at the very start, the investigation, research, and experimental department was established.

Quoting from one of the reports of the American Telephone and Telegraph Company:

> For this purpose a staff of technical, electrical, and mechanical operating experts must be gathered together and educated. To educate and assist these, to enable them to do intelligent work, to avoid repetition and duplication, all that had gone before and all that was being done here and elsewhere must be known. For this purpose a bureau of research and information was formed. Patent and legal experts must be employed and educated to secure the advantage of this work and study, as well as to furnish protection in the use of the patents.

Most if not all of the innovations in the telephone instrumentalities were first tried out, if not evolved, by that staff. This largely accounts for the present position of the Bell System and for whatever position it may occupy in the future. The staff includes a greater number of scientific and technical and mechanical experts of the higher grade than can be found in any university or industrial enterprise in the world. It enables the Bell System to keep in advance of the art, protects the public from exactions of outside inventions, and gives every associated company in the system expert advice and expert assistance in the operation and improvement of the existing system, and in the projection of future development.

Quoting from a recent report of the Company:

> This advance has not been dependent on any one invention, idea, or suggestion, but is the result of tens or even hundreds of thousands of little things, each a spadeful, as it were, in filling up or removing the obstacles, and smoothing the paths of progress. Inventions of wondrous analytical subtlety have marked epochs in the progress of the telephone service, but in an art or industry, or system made up of many interdependent operations and services, each new idea, no matter how controlling, must be adapted to what already exists to make it serviceable; any great or small invention is only useful when molded into the mass so that its service becomes an indeterminate part of the service of the whole system.

The cost is large. It is spread over a vast system. The unit cost is small, but the results, almost unappreciable from day to day, are marked from year to year. The entire cost of years was saved to the public by the protection it gave against one claim of an extended patent, which would have prevailed except for the knowledge and information which this bureau had and which could be obtained from no other source.

This work could not be carried on by any disassociated, unrelated system of local exchanges; no limited system could give the universal service of the Bell System, of which every subscriber is a center from which conversation is possible to the extreme limits of the country. Nor is any like work being carried on by any government owned and operated telephone system in the world. All the world depends on the Bell for the latest and the best. Many novel projects are advanced by inventors or promoters, some legitimate, some for promotion purposes, but without any exception the only things in the way of intercommunication by conversation which stand the test of time are those which have been either initiated inside or adopted and developed in the Bell System. The work is carried on quietly; and what is done or being done is not announced by promise or prophecy, but by introduction to public use.

In the improvement of new instrumentalities the "machine as a whole" must be put under trial. In most utilities the "system" is made up of separate "machines" or parts, each of which can be developed independently in different manufactories or laboratories and combined into one effective system.

The telephone "talking machine" is *not* the transmitter or the receiver alone. A single telephone or transmitter and receiver, without the connecting wire, is about the most useless thing in the world. The "talking machine" or "complete instrumentality" consists of the transmitter and receiver, the connecting lines, the switchboard, auxiliary apparatus, loading and phantom coils, and the thousand and one instruments and instrumentalities any part of which may be put in use for any conversation and all of which is necessary to complete a universal system. Every improvement must be demonstrated by use on the entire "talking machine," on the whole system; if it is but one unit the effect must be noticed on the whole and its connection with all other parts observed.

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Quoting from a report of the Company:

The telephone plant, in all its parts, must ever be subject to a process of evolution tending always to a higher and higher type. Its capabilities of responding to these advancing requirements furnish a good test of its design and efficiency and value.

The plant of the Bell System must not be regarded merely as a completed machine which becomes worn out, and then, after a time, is thrown away and replaced by a new one. It is like an ever-living organism, always growing in size and usefulness, incorporating into its structure what is new and improved, and eliminating the obsolete, the worn out, and the used up. Thus it is kept permanently in a condition of full vigor and at the point of highest attainable efficiency, anticipating the ever-growing needs of the service and responding successfully to the always increasing requirements of the public.

The problem *commenced* with the "smallest possible talking machine," a telephone transmitter connected with a receiver, such as Bell and Watson used in that first historic conversation. This small machine has expanded into one of many millions of receivers and transmitters, connected by millions of miles of wire, equipped with thousands of pieces of auxiliary apparatus. The present problem has to do with all of this. The problem of transcontinental talk could not be solved over a local circuit, nor a circuit reaching but half way; it had to be solved over an equivalent circuit connected with the system. The solution of talking through underground circuits could be solved only by actual underground circuits. The solution of the problem of electrical high tension interference could be solved only after high-tension circuits were in operation and their effect upon the system observed. The problem as to giving the most efficient local and long distance service to hundreds of thousands of subscribers had to be solved by observation and deduction on a system which had the lines and the subscribers. In other words, the telephone service of to-day has been an evolution, step by step, some short, none very long, from the original "small machine"—*i.e.*, two telephones and a connecting wire between adjacent rooms—to the existing nation-wide universal "talking machine" of the Bell System. The instruments which Bell and Watson used with difficulty between two rooms in the same building can now be used, because of the improvements to the "machine," to talk across the continent. Used under the same conditions as then existed, there would be the same limitations in talking.

It is well known that there is a decided limit to distance in underground electric transmission. The first long distance circuits had to be overhead from office to office. The short underground circuits of local exchanges would at that time *kill* the transmission. In time, ways were found to overcome this effect, and long distance wires are everywhere connected with the local underground exchange systems. Before a long distance underground talking circuit was built it was thought by physicists that a couple of hundred miles was the limit, and even that distance could not be used as part of a longer circuit in connection with overhead circuits. Two hundred and fifty miles of underground line were built, and extended to 500. By the time the 500 miles were completed, means were found to make conversation possible for that distance, and, what was more important, that 500 miles could be used in a longer circuit consisting of underground connected with overhead circuits. In the first transcontinental demonstration it was so used, and in the first wireless transcontinental demonstration the talk from New York was transmitted to the wireless towers at Washington wholly through underground circuits.

When the first telephone line was built between Boston and Lowell, telephone experts did not believe that commercial talk would be possible, and if possible, did not believe that there would be business enough to pay expenses. After it was built, the Bell experts found a way to make conversation possible and business followed.

Physicists advised us that if the extraneous noises due to earth and atmospheric currents could be gotten rid of, it would be possible to talk between New York and Chicago over a copper wire as large as a man's wrist. Transcontinental talk is now being carried on over ordinary copper circuits and "phantom" circuits are now superimposed on the regular circuits, increasing the line capacity. The Boston and New York line was projected; then Chicago, then Denver, each a step, and when the Chief Engineer of the Bell System advised that talk over a transcontinental line was possible, work was commenced, and in July, 1914, the first test was made, and by January, 1915, the line was opened for commercial purposes.

If there were no Bell System—only disassociated individual companies or groups of companies—no line over a few hundred miles long would have been built, or if built it could not be operated as satisfactorily as under the present conditions. Efficient commercial telephone operation can only be maintained when every operator on the line and the system connected with it is under one control. For long distance and the wireless, the cost of experimentation, construction, and loss before operation becomes self-sustaining would be beyond the possibility of any one of the disassociated companies.

The development of the exchange service has been by the same process. As each hundred miles in the distance presents new problems, so does the adding of each hundred subscribers to a local exchange. When the development reaches city and suburban exchanges, with instantaneous connection and connection with adjacent exchange districts, the problems become very complicated.

When in July, 1914, after the talk to San Francisco, the Chief Engineer said that wireless conversation was possible, authority was given him to go ahead, and for some months conversations were carried on between more or less distant temporary low-power wireless stations. At last, believing that the art was at least as far advanced as was the art of telephony at the World's Fair in 1876 and that further development depended on the use of the best wireless towers, we approached the Navy Department and immediately their great wireless stations were placed at our disposal. The wireless experts of the Navy became as much interested in the problem as were those of the telephone company. What was accomplished you know. What will be accomplished is unknown. Little by little, step by step, development is probable until it can be utilized at least as a supplement to the great Bell System.

Talking over wireless is like talking in a boiler shop. Earth currents, and electrical disturbances which sweep through space, are picked up by the wireless antennæ and translated into noise by the delicate receiving instruments.

These storms are the *bête noir* of the wireless, whether telegraph or telephone, and for months at a time they will be so continuous and so serious as to make wireless communication over great distances impossible and over short distances extremely difficult.

There were the same difficulties in the early development of the telephone. The grounded telephone wires, acting as does the antenna of the wireless station, picked up these same currents and translated them into noise. Some may remember that these noises in early telephone times made conversation always difficult and sometimes impossible. The noises caused by earth currents were gotten rid of by making the telephone circuit of two wires entirely insulated from the earth. The atmospheric disturbances still remained, but were neutralized by transposing the two wires, or virtually twisting them, and in this way the regular telephone conversational current was given a noiseless path. What device will be possible to neutralize the effect of these electrical storm disturbances on the antennæ of the wireless is yet the problem of the future. Prophecy is easy, but in face of the seriousness of the problem, no one who has to make good will be likely to make any definite promises.

What the development of the telephone has emphasized is this fact, that the problems which have been solved

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could never have been by any system of disassociated, unrelated local telephone companies. No one company would have had the "machine" to develop, and for that reason no such problems. The magnitude and the cost and the advance work necessary would have been beyond any local system.

Given the idea and the knowledge and the brains, development in any line of art, science, or industry is largely a question of money, and as the world has seen from thousands of examples, some large and some of small importance, to spend money on an "idea" requires initiative, enterprise, courage, and the stimulus of reward.

The reward of the Bell System is protection to its shareholders through producing something better and of more value to the public at a price within the reach of all, and through the policy of making it so useful that no one can do without it.

Control and Regulation Versus Government Ownership

THERE are theoretically two ways of protecting the public in their assumed or real rights, so far as public service enterprises are concerned; first, "Government Ownership"; second, "Control and Regulation."

Government Ownership

The most earnest advocates of government ownership will admit that it carries with it and cannot be divorced from many very undesirable conditions.

The most disturbing feature, and the most impossible of control, is protection from the government itself. It would be an unregulated monopoly, with unrestricted, unlimited powers, serving *individuals* for their *private* advantage and benefit at the *cost* of the general revenue.

Government ownership would introduce beyond a possibility of prevention partisan and political control into enterprises absolutely non-political and which should have a purely business management. Whatever public demand there is for government ownership is not because of faith in the efficiency of the government, but because of a fear that in some unknown, mysterious way, individual interests may be affected by private enterprise.

All will concede that if but a part of the mismanagement and waste revealed by investigations of government operation are true, the public could not be satisfactorily served by any management under our form of government.

For the protection of the community, of individual life and health, there are some necessities that should be provided for all at the expense of all, such as roads, pure water, and sanitary systems for concentrated population, and reasonably comprehensive mail service. The determination between services that should be operated by the government and those which should be left to private enterprise under proper control should be governed by the degree of necessity to the community as a whole, as distinct from personal or individual advantage. The mails might be put in the doubtful column under this distinction; but it must be remembered that originally the mails or posts were put under government operation for other reasons, and it is a grave question whether the great extension of the mails to purely commercial purposes at the expense of the general revenue has not extended the postal system beyond its scope or advantage, even in its broader interpretation.

It is within the power of everyone by personal observation to determine the efficiency of publicly managed operations.

Do your letters come to you as quickly as is possible? Do you depend on the mails even for overnight distances in matters of importance, or upon the telephone, telegraph, or private journey? Are you treated considerately, efficiently, and promptly by public employees?

What politically managed enterprises are there that have not deficiency in service and deficit in operation, if measured and audited as private operations are?

While there are many enterprises, like gas, electric light, owned and successfully operated by municipalities, they are limited in size and are usually administered by those who give their time without cost. On a larger scale of operation, with larger problems, the time and attention necessary would so cut into or interfere with regular occupations, that free administration could not be depended upon and efficient managers could only be obtained in the open market in competition with private enterprises.

Deficits in government operation, like waste in political administration, are acquiesced in because of the political activity of those benefited and the indifference, or apathy, or helplessness of those who bear the burden.

Those who point to the admitted or supposed efficiency of the post office should remember that that portion of the post office service conducted by the Government embraces only the collection, distribution, and delivery of the mails through disassociated independent post offices. The transportation of the mails from post office to post office—the largest and most complicated part of the service—is by transportation facilities developed, administered, and operated entirely by private enterprise. The department admits the rural delivery as conducted by the government is wasteful, and that equal efficiency could be obtained and millions could be saved if it was farmed out.

In considering the question of government ownership of utilities the form of organization of the government itself will be found to be controlling.

That government which now has the broadest and most extensive control of its utilities is the most highly and thoroughly organized government in the world. Its efficiency has been recently displayed in a very striking manner. It is in operation an autocratic aristocracy with some elements of popular voice and freedom of expression. Its subjects *en masse* are not potent, nor likely to protest except under great provocation, or so long as freedom of activity and opportunity to profit remain in private enterprise. There probably would have been less government ownership had it not been for controlling military and political reasons.

In the administration its executive and operating departments are permanent organizations, with permanent officials and employees. All of them have a prestige and standing only a little below that of officers in its military organization, and decidedly higher and apart from ordinary citizenship, which makes the positions acceptable and desirable to many, even at a small compensation. In all branches there is opportunity for anyone to reach even the highest positions, through displayed efficiency and ability.

The policy of the government respecting its commercial and industrial development, both domestic and foreign, is strongly progressive and helpful. In furtherance of those interests all sorts of subventions, special concessions, and discriminating rates are made. The whole country is but the size of one of our States, densely populated, with numerous large centers, which simplifies the problem. With all these advantages, the success obtained is not such as would commend it to other countries.

While this policy has prevented speculation in utilities, the wildest speculation in all lines of industrials has been, if not encouraged, at least allowed, and against this there seems to be no objection on the part of the government, nor protest or opposition on the part of the public.

The prices charged for the same class of service are more or less the same as in the United States. Ordinary services, which in fact are deferred, are cheaper, but charges for their preferred services, which compare with our ordinary service, are about the same or more. If wages

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and other costs were considered, the advantage would be greatly in our favor.

Is Our Form of Government Adapted to Operation and Management of Utilities?

Our government is a representative democracy. The policy which determines the action of the administration is settled for the time being, and the leaders selected, by a plurality of those who are interested enough to vote, which seldom, if ever, constitutes a majority of all.

Crops, employment, and other commercial conditions have been the determining factors as to whether one of the old parties, or some one of the recurring new parties, should for the time control the government. Whichever party, whichever political policy temporarily comes in, with it comes a radical change in departmental policy and a change in all the responsible heads of the departments, and all the responsible subordinates. There is much the same change in the departmental and bureau chiefs, if the same political party is continued in power.

The heads of departments are not selected on account of their experience or knowledge of the business which they are called upon to direct, nor necessarily with that of any similar or any other business. To point out deficiencies and promise reforms becomes a necessity to every candidate for office. The controversial and exceedingly exciting political campaigns are made up chiefly of accusations, if not of absolute crookedness at least of the grossest incompetence of those in office, and of reckless promises of all sorts by those who want to get in. These campaigns are the cause of irreparable damage, for much that is alleged though never proved is believed by the public.

If but a small part of these alleged evils did exist, an absolute cleaning out of all and the prosecution of many would be a positive duty, for such frauds or such corruption as are alleged cannot exist at the head without the knowledge of all, and the participation of many. The tenure of office is too brief to reform any deep-seated irregularities. To perform the duties of his office is enough for any official even if he has had the necessary training. When to that is added the usual political activity, the most capable must fall short, even with the best intentions.

Because of these conditions governmental "operation" must be reduced to rule and regulation; individual initiative or responsibility is impossible.

It is not the fault of department heads, subordinate chiefs, or of employees, but it is an essential part of the system. Some call the system "red tape" and speak of it sarcastically. *It is necessary* and *without it*, under our *political* form of government, governmental business *would* be demoralized. It is expensive and inefficient, except for routine work. Clerks and officials may come and may go, but the business will go on in the ruts of systematized routine. Mediocrity will remain. Capacity soon seeks other fields of action. Initiative, enterprise, is too upsetting to be tolerated and too destructive to allow it to get much notice.

Do not understand that this is a tirade against our form of government; it is not, it is simply a broad statement that our government activities can never successfully include industrial and commercial enterprises or developments.

In all industry or enterprise, inequality begins to develop itself at the threshold, and continues throughout the whole organization. No two workers are equal as to the amount or quality of accomplishment. Full recognition of *this* and *no other consideration* must determine the place of each individual in a successful organization.

Without an operating organization absolutely divorced from and independent of our political organization, there would be demoralization and disaster should any of the utilities be taken over by our government.

The question is one of great importance. Nothing should be attempted without the most thorough and painstaking investigation controlled by a desire to make the "finding" consistent with the actualities, and not to make the "actualities" fit preconceived ideas or desires.

The only practically democratic government, speaking a common language with us and having a highly specialized and fairly continuous civil service, is that of Great Britain, which took over a previously profitable telegraph service in 1870. Since then it has lost many millions of pounds in its operation, with an increasing annual deficit, which for 1913 amounted to over $6,000,000. The telegraph rates, taking into account distance, wages, and other controlling factors, are substantially the same as in this country even before the increase of 50 per cent. in the minimum rate recently made.

The National Telephone Company's exchange service was taken over in 1911. The company had been paying the government an annual license fee of about two and one-half million dollars, and paying its own security holders approximately 6 per cent. out of its earnings.

Although the government had a telephone organization, which operated the toll lines and some important exchanges; although this organization, like that of the telegraph and post office, is permanent, with permanent executive heads; although it took over the organization of the private company, the telephone service earned for the year 1913-1914 only one and one-half million dollars, but little more than one-half the license fee paid the government. The government operation has so far been very far from satisfactory and the public are clamoring for a service free from political and parliamentary control.

Control and Regulation

In the early history of our civilization, in a dispute between arbitrary power on the one hand and the rights of the people on the other hand, trial by one's peers was instituted. The powers of the "Jury of Peers" were to ascertain and determine the facts in all cases of dispute.

This institution has served well and long in our history, and nothing has appeared which either is or promises to be as satisfactory.

There are differences as to statements of fact between the public and the public utility enterprises, particularly those of transportation.

There are in most of the States and in the nation commissions of control and regulation, which are in effect juries, to determine the dispute. What better way can or could be devised for the settlement of all these questions? *This is the practical way.*

When juries were originally constituted for the protection of the rights of the people, great care was taken that they should be non-partisan, non-political, and absolutely independent even of the most arbitrary sovereign. In letter at least these conditions have never been departed from.

What better fundamental principle or policy than this could be adopted for our commissions of regulation and control?

These commissions have to protect the "individual member" of the public *against corporate* aggression or extortion, and the "*corporate member*" of the community *against public* extortion and aggression. They get their power from, are answerable to, and dependent upon the public. That public is an interested party in the controversy, just as susceptible of wrong notions, wrong impulses, as any individual, but with no individual responsibility or conscience. For this, if for no other reason, prejudice and partisanship should be absolutely guarded against and there should be the most careful provisions safeguarding to these commissions their independence and liberty of action.

It is difficult for any human being to rise above his prejudices or preconceived notions, but our higher judiciary has shown that a body of men can be brought together which will assume the gravest responsibility and act with wonderful efficiency and equity when its absolute independence is guarded by a zealous public.

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Public jealousy for the absolute independence of the jury has been an effectual safeguard to the individual and to society. While in the workings of our jury system errors may have been committed, there is no living man who will not cling to it for his protection.

Cannot the position of our commissions of control and regulation be as firmly established? They were created because of the necessarily superficial, and very unsatisfactory and uncertain, control and regulation by direct legislation. The system could not be perfect from the start, for practice and experience alone make perfect. The few years of experience have demonstrated the power for good when exercised along the best lines, and the power for evil when prejudice, partisanship, and incapacity creep in.

To equip our commissions for the best service the appointees must be of the highest standard, selected because of their general and broad experience and reputation among their fellow-men. To secure such individuals, the positions must command the highest respect, and their decisions, even if not entirely satisfactory, should not be subjected to captious criticism or objection.

So long as the duties are confined to control and regulation, and are judicial, not executive, there is a large field from which to select the most capable of men.

Against grave errors or findings against usurpation of power, there is and should be the protection of the courts. An orderly appeal from a commission to a court should not be considered in any sense as a resistance to constituted authority.

In the work of the commissions, many of the subjects are recurring and of substantial similarity, in the consideration and determination of which experience and intimate familiarity with the subject and with past practice and precedent are necessary. For these reasons the term of office should be of sufficient length to give the public the benefit of that education to which necessarily the early period of their official tenure is devoted.

The positions should be appointive, not elective. The tenure should be for life, subject to removal only by impeachment. If the tenure is limited and if in the performance of official duties any member establishes his sufficiency for the position, reappointment should be an established practice.

The compensation should be commensurate with the importance of the office, and there can be none more important. It should be sufficient, together with the prestige of the position, to command the services of the very best citizens regardless of their private means.

Upon these commissions as bodies, and the members as individuals, will depend the future of "Control and Regulation." Never probably has there been a new departure established any more satisfactorily, under such difficult, uncertain, and unstable conditions. Established to restrain and suppress on the one hand the inertia of certain evils which have been ingrained in our commercial practices, and on the other hand to restrain an indignant and excited public, that public by which it was created and could be destroyed, it has done *so* much, *so* well, that there is absolute proof of its great possibilities under perfected organization and a higher public recognition.

Let Us Resume Prosperity

Since coming to the Coast we have heard much about overproduction, about crops without market, fruit rotting on trees. We heard in the East, last winter and spring, much the same about industrial enterprises being shut down for want of demand for the commodities.

The trouble is not *overproduction*. It is *underconsumption*. Put the millions of men now idle—or working temporarily on war materials—at work permanently. Those now at work temporarily are not yet consumers in the big sense; they are paying off debts incurred, or making good the savings spent during the idleness of last year and spring. Put them at work permanently in the upbuilding of our enterprises of utility and transportation.

Establish rates that will make the investment in these enterprises so certain that the hundreds of millions of capital necessary for their extension and improvement will be forthcoming.

There is plenty of idle money, as well as idle men. Put the money at work; turn it into productive labor.

The spending of this money on constructive activities will put a good part of these millions of men at work, and those millions will start such *consumption* of all commodities as will make work for all the others.

Instead of *overproduction* there will be *underproduction* in all the workshops, orchards, and fields of the country.

What matter it if some roads do become far more prosperous than the average? It is necessary that others may live. There are, and always will be, unequal conditions. Some roads can prosper and pay liberal dividends on rates that will hardly pay operating expenses of others. Natural inequalities cannot be regulated or controlled by man. Let natural and economic laws do that.

Put men into a new country, some will prosper, others barely make a living. It cannot be prevented, unless you kill prosperity for all.

Suppose some prices are increased a little. What matters it when all have incomes to buy? The producer may pay a few cents more freight on each box of fruit, but it is better to do that, get his costs and some profit, than to get nothing.

A man earning wages can pay a high price. One not earning cannot pay any price.

Past experience should teach all of us that when prosperity sets in she is no niggard with her favors.

Touchstones Found or Lost

INTERESTED attention keeps our work alive. Like rain and sunshine to a garden, real attention draws out the richness and the value, and nourishes the possibilities in the fields we work in. Listlessness is a blight to be fought. When a girl takes and transcribes dictation day after day, it is easy for her to keep her eye on the notebook, her fingers flying over the keyboard with mechanical precision, while she is thinking scarcely at all of the meaning of the words. Then, of course, one of the symbols is misinterpreted and in goes the wrong word. But even worse than this, if listlessness thrives, good chances to improve the work are going to be missed because active, positive thought isn't being put into it. Not only bad mistakes, but lost chances hang on the droopy Listless Bush. When routine work is being done, the weed is especially eager to creep in, but interest and attention fortify the garden against it.

A Hindu poet tells of a man who wandered over the country always searching for the touchstone to transform iron into gold. For years he passed from place to place, looking, looking for the precious stone which would mean his victory. One day a lad ran up to him saying, "Where did you get this golden chain about your waist?" The old man looked down and saw that the iron chain he had worn had turned to gold. When he had found the touchstone he did not know. He had gone about, always picking up stones and touching the chain until the habit had grown so strong he ceased to look to see if the change had come. And so he had found the touchstone and had thrown it away. *He had thrown it away.*

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The Telephone Behind the Battle

"Telephone and Map Generals." His Excellency General von Suren with His Staff in Mlawa

THE great "drive" of the Allies in the West, which began on September 25, offers the latest and most brilliant illustration of the power of the telephone as an instrument of war. For four weeks before the taking of the first trenches, the artillery pounded incessantly at the enemy, and during the last sixty hours the shell fire increased in intensity till the deafening horror of the noise was beyond description.

Artillery fire is a double-edged weapon. With high explosives it demolishes the concrete trenches of the enemy, and with its inconceivable volume of sound shatters the enemy's nerves. So even the noise in this most scientific and deadly of wars is not a waste product, but an effective weapon. The first thing to be done, writes a correspondent from behind the lines in France, when the men are brought in for a period of relief from the trenches, is to get them out of hearing distance of the gunfire. While they are under the strain of the roar of bombardment, recuperation is impossible. The effect of four weeks of incessant pounding, with a climax of such intensity, can hardly be imagined.

Behind this artillery fire, governing its action, its intensity, its aim, we see the telephone. The first report of the great drive, with its headline, "Battle Conducted by Telephone," gave only a suggestion of the potency of the system of wires and the part they played in the concentration, the persistence and tenacity of the attacks.

For more than twenty-two hours, while the battle was in progress, General Joffre stood at his telephone, not even pausing in his work for food or drink. It was in the kitchen of an innkeeper near the front that he had taken up temporary headquarters. Before him was a large scale map which he consulted constantly as reports came to him at intervals over the telephone wire. Back over the wire went the general's orders, which were diffused by other telephone circuits till transformed into action. And the completed actions were in turn recited over the wires to General Joffre, keeping his finger thus, steadily, on the pulse of battle. From nine o'clock one morning till half past seven the next, General Joffre was at his telephone. At last, the report goes, he made certain notations on his map and then put down his pencil. "It is over," he said; "let us go take a bite."

The telephone man, could he have seen in detail the whole battle line as it was in action, would have thrilled at the realization of what his beloved instruments and wires were doing. Forward observing officers hold tiny corners on shell-swept hills, speaking constantly with their batteries in the hills behind; correcting the aim; advancing the line of fire, increasing the rapidity of the discharges. Then infantry begins to advance; the columns sweep on, the observing officer strains his eyes to catch every detail. A tremor seems to shake the advancing line at one point, the resistance here is too strong; the line breaks and falls back; the enemy try to push their advantage, but the lonely officer on the hill has already hurled his orders into the telephone and even as the broken line falls back, into its place lashes the most terrific discharge of shrapnel the war has seen. Then the big guns themselves come into action and the trenches of the enemy are blown to fragments. At last the artillery fire ceases at this spot, the line again advances, and this time it moves steadily on, into the mêlée that marks the struggle for the second line of the enemy's trenches. But on the hill above, commanding this whole section of the valley with his telescope, the officer is still watching, and when the time comes he will speak again, and again his words will be repeated by the giant guns—words translated into the guns' own tongue, which listen for no reply.

A Field Telephone in Operation in Mexico, Communicating with Headquarters a Mile Away

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Commenting on the very recent removal of Sir Ian Hamilton from command of the English army in Gallipoli, the *Sun* says editorially:

He delights in warfare for its excitement and its opportunities for glory. . . . He is a brilliant tactician and executes orders with uncommon vigor and audacity. Therefore he makes an admirable corps commander. . . . Calculation, deliberation, waiting, irk him. *He is not a map and telephone general.* [Italics are ours.]

The commander nowadays must be "a map and telephone" officer, for that is the way battles are fought to-day. Nothing, perhaps, has so forcefully emphasized the fact that methods of warfare have been revolutionized by the telephone than this removal of a great soldier from an important command for the reason that he is not adapted to the essential method of commanding by telephone.

On the Eastern front a minor victory of the Austrians over the Russians was recently explained as being due to crossed telephone lines. At Austrian staff headquarters an officer was amazed as he picked up his telephone receiver to hear a conversation being carried on in the Russian language. He was unable to understand the language, but in an instant he had a brother officer at the telephone who could make out and take down the facts thus almost miraculously given them to learn.

An order was being given to a Russian brigadier to attack a certain Austrian position with two battalions and three companies for a flank attack. The wires being crossed evidently made the transmission very poor, for the Russians had to repeat the orders again and again. The Austrians missed nothing.

The subordinate Russian officer protested that the execution of such an order would surely result in defeat and heavy losses. His forebodings of course proved correct, since the Austrians, with this advance information, were amply prepared to meet and overcome the attacking force.

About 2,000 prisoners were taken, but the young officer who had protested the order was not among them. He was left on the field.

Typical Telephone Heroism

LATE this summer a terrific hurricane from the West Indies swept across Texas. It came as a climax to a series of storms which had vented their fury in Arkansas, Missouri, Kansas, Oklahoma, and Texas since the beginning of the summer—the worst storms that have been experienced there in many years. The loss of life and the destruction of property in the wake of the wind and floods make a discouraging record, but it is an ill wind that blows no good and even the wind of the hurricane was not entirely ill, for out of the chaos and destruction arose such a marvel of courage and bravery on the part of operators, managers, linemen, and other telephone employees as the history of telephone heroism may be proud to claim.

On the morning after a night of hurricane and flood in one city in Texas, a carriage was sent for one of the operators who lived outside the city. In a few hours the driver returned to say that it was impossible to reach the suburb, as the wreckage and high water made the streets impassable. Miracles were possible, however, for the stanch operator, who knew she would be needed on this of all days, when the stricken city would turn to its telephones for help. For hours she had battled her way against the wind and torrents, escaping falling trees and wires, and climbing over piles of wreckage until she reached the central office. It was through such devotion that the operating force was enabled to count its full quota, even in the face of storm and flood.

In another city of Texas the roof was blown off the telephone building, where scores of people were crowded for refuge, but the operators stayed at their board. The linoleum was torn from the floor to serve as a protection for them and for the switchboards against the torrents of rain. Soon there were only six lines left working, but service was continued until every line went out. Meanwhile a building had collapsed next door, and now the two operators turned to the work of nursing the injured who were brought into the exchange. For twenty-four hours after the lines went out the operators worked over the injured, as the storm was so violent it was impossible for them to be moved.

Another operator worked at her switchboard till one section of it was blown over and wires were torn out by the fury of the storm.

When the levee broke at Newport, Arkansas, the operators all hurried to the exchange and for six days and nights they stayed there with six feet of water around the building. Relieving each other at short intervals during the period of greatest strain, the operators directed the rescue work in various parts of the city, and warned other sections of the approach of the storm. During their "off-shifts" the operators did the cooking "for the crowd" out of such materials as it was possible, or rather, almost impossible, for them to get. A box of food supplies from the girls in another office, which was suffering less from the storm, reached them by some good fortune, and what this practical example of helpfulness meant to the six-day prisoners may be imagined perhaps by whoever has been threatened with flood and famine.

The toll operator at Uniontown, Kansas, was warned about midnight that a cloudburst had occurred farther up the river, and the river, higher than ever before, was rolling a flood down onto Fort Scott. Ten minutes later a cab line proprietor, warned by the Uniontown operator, was busy taking people from the low-lying districts of the city to the uplands. The operators at Fort Scott were busy, too, and warnings were sent out all over the city. When daylight saw bridges and houses swept away, the people were safely out of the valley.

On the heels of the passing storms, the Plant men were ready to repair the lines the moment the winds had subsided enough to let the repairs hold. The men worked steadily under the frightful conditions which always follow a flood. Hundreds of miles of toll lines were actually blown away. Up to their waists in water, under scorching sun, miles from their base of supplies, since the country was in no condition to permit even temporary camps, the linemen worked from dawn till dark. Sometimes the wires were covered with moss which impeded the progress of the work, and, in at least one case, the men had to climb on floating houses to restore the lines. Fighting the fury of the storm to restore the service at the earliest possible moment so that the telephones might help in the rescue work, the men faced perils which will probably never be known.

In 1900 the great storm claimed 10,000 lives; this storm of August, 1915, was far more terrible, yet the toll of lives was 500, for fifteen years of telephone development had wrought a fuller safeguard, and the heroic warnings that sped over the wires before the wind did their work well.

Such courage and devotion have but one explanation, call for but one tribute. And the explanation and the tribute are the same. It is the spirit of the Bell Service. Telephone service is not a luxury, it is not a light thing that may come and go. At times of such emergency, especially, life and death is the meaning of telephone service. And to the end that it be available in all the fullness of life and intelligence, as well as mechanical perfection, Bell employees stand ready with the full measure of loyalty which knows no limitations.

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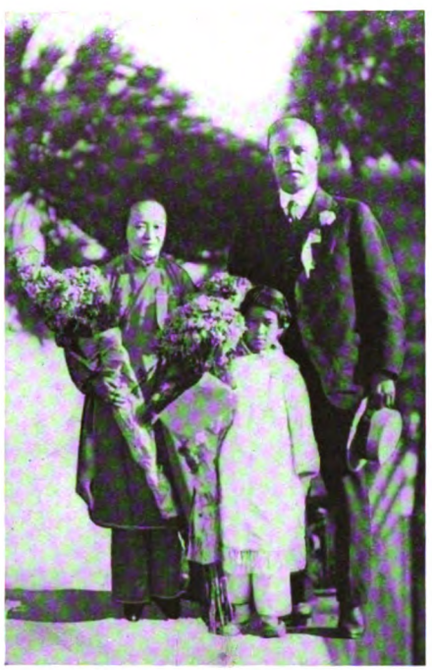
Telephone Pioneers of America

THE fifth annual meeting of the Telephone Pioneers of America was held in San Francisco, September 21, 22, and 23, 1915. The attendance numbered 340, and the joint opportunity of attending this meeting and visiting the Panama-Pacific Exposition lent an interest and attractiveness to the occasion that made it as unique as it was unusual. Of course, the principal thing was the getting together of these Telephone Pioneers and members of their families for their annual reunion, and the trip out and back made possible the formation of even more intimate acquaintanceships than the limited time at the meetings themselves has ever before permitted. Added to this was the further privilege, which many enjoyed, of "seeing America first," or maybe for the first time.

A special train left New York on September 14 with seventy-eight Pioneers. Other Pioneers joined the party at Albany and Buffalo. At Chicago all the Pioneers from the Eastern and Middle States formed one big party and traveled in a special train through to San Francisco.

At Albany the train was met by a delegation, and the ladies of the party were presented with flowers. At Chicago automobiles were provided and the whole party was given a ride about the city. This form of entertainment was repeated at Omaha and Denver. At the latter place the party visited the various exchanges, and visits were made to Pike's Peak, Crystal Park, Garden of the Gods, Manitou, and the Royal Gorge. The train made a special stop at Glenwood Springs, where many of the party enjoyed the novelty of the hot spring baths. At Salt Lake City another stop was made, and after the visitors were driven about town in automobiles, they attended the regular afternoon service at the Mormon Tabernacle and listened to an organ recital and the singing of the choir of 200 trained voices. The trip was made over the cut-off across the Great Salt Lake just as the setting sun and rising moon were mingling their beams upon mountain and lake and sky in a picture of indescribable beauty.

This Is the Way the Pioneers Looked to Davenport AFTER the Banquet



George W. Peck, Exposition Representative, A. T. & T. Co.

At Reno the train was again met by the local telephone people, who presented flowers to the ladies, and when Sacramento was reached, a delegation from San Francisco awaited the party to extend a welcome. In this delegation were twelve Chinese girls from the San Francisco exchange, dressed in their Oriental garb, and bearing enormous chrysanthemums as gifts to the visiting ladies. San Francisco was reached September 20, and the party was taken in charge by the local Committee of Arrangements. The program of entertainment and business follows:

TUESDAY, SEPTEMBER 21, 1915

9.00 A.M.—Registration, green room, mezzanine floor, St. Francis Hotel.
10.30 A.M.—Business meeting, rose room, St. Francis Hotel.

Flag of Telephone Pioneers of America Raised on the Flagpole of Oregon Building, Panama-Pacific Exposition, September 23. This Flagpole Is 251 Feet in Height and Is the Tallest in the World by Nearly 100 Feet.

2.30 P.M.—Addresses, rose room, St. Francis Hotel.
7.00 P.M.—Banquet, colonial room, St. Francis Hotel (American Telephone and Telegraph Company).

WEDNESDAY, SEPTEMBER 22, 1915

Mount Tamalpais Trip (Crookedest Railroad in the World), The Pacific Telephone and Telegraph Company.

9.00 A.M.—Double-deck auto buses leave St. Francis Hotel for Ferry.
9.45 A.M.—Ferryboat *Tamalpais* leaves Ferry Building.
10.15 A.M.—Special electric train at Sausalito.
10.35 A.M.—Mount Tamalpais special train at Mill Valley.
11.45 A.M.—Sightseeing at summit of Mount Tamalpais.
12.00 M. —"Gravity" cars leave summit for Muir Woods.
12.45 P.M.—Bull's-head barbecue in grove, Muir Woods.
4.10 P.M.—Special train for San Francisco.
6.35 P.M.—Arrive in San Francisco.

THURSDAY, SEPTEMBER 23, 1915

Reunion at Panama-Pacific International Exposition and Demonstration of Transcontinental Telephony.

9.45 A.M.—Double-deck auto buses leave St. Francis Hotel for Exposition Grounds.
10.30 A.M.—Presentation of plaque to Telephone Pioneers of America by officials of the Panama-Pacific International Exposition.
11.00 A.M.—Demonstration at American Telephone and Telegraph Company's exhibit, Liberal Arts Building.
12.30 P.M.—Special auto trains at Tower of Jewels to "Old Faithful Inn."
12.45 P.M.—Taking of group pictures in "Yellowstone Park."
1.30 P.M.—Lunch, "Old Faithful Inn," on "Zone," The Pacific Telephone and Telegraph Company.
2.30 P.M.—Special demonstration of the "Geysers" in theater, "Yellowstone Park."
3.30 P.M.—Panama Canal exhibit.

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At the business meeting on Tuesday morning an address of welcome to San Francisco was given by Mayor Rolfe, and Mr. Scott, of the Pacific Telephone and Telegraph Company, greeted the Pioneers on behalf of the Pacific Company. Vice-President Thomas D. Lockwood acknowledged the welcoming speeches in his own inimitable way, and the reading of reports and election of new officers followed.

The officers elected were:

PRESIDENT

Theo. N. Vail.....New York, N. Y.

VICE-PRESIDENTS

Thos. D. Lockwood.....Boston, Mass.
A. S. Hibbard.....Chicago, Ill.
T. B. Doolittle.....Branford, Conn.
L. B. McFarlane.....Montreal, Can.

TREASURER

Geo. D. Milne.....New York, N. Y.

SECRETARY

R. H. Starrett.....New York, N. Y.

EXECUTIVE COMMITTEE

E. F. Sherwood.....New York, N. Y.
F. A. Pickernell.....New York, N. Y.
C. G. Du Bois.....New York, N. Y.
A. L. Salt.....New York, N. Y.
R. T. McComas.....Cincinnati, O.

An entertaining paper by Mr. Lockwood on "The Forerunners and Genesis of the Telephone Exchange" began the afternoon with recollections of the early history of the telephone business. Then followed an interesting and amusing address by Mr. C. B. Hopkins of the Pacific Company on his telephone experiences in the State of Washington. Mr. Henry W. Pope, formerly secretary of the Pioneers, had written a paper on "A Retrospect of the Application of Electricity to Local Purposes Prior to the Telephone." This was read by Mr. Lockwood, as Mr. Pope was unable to attend the convention.

At the banquet given by the A. T. & T. Co. in the evening the entertainment was a triumph of originality. A genuine telephone pole about twenty feet high had been erected at the center of the guest table, and from the top crossarm W. R. Davenport, dressed as a lineman with long white beard, and supposedly having just awakened, from a dream of forty years, to the wonders of the telephone, sang to eight girls, in the balconies, representing New York, Minneapolis, St. Louis, New Orleans, Boston, Chicago, Denver, and San Francisco. The replies sung by each girl in turn were extremely good. Denver went farthest by suggesting:

"You've got the bells a-ringin' and the world is all in tune.
Just keep your wits a-dancin' and we'll soon talk to the moon."

To this the lineman readily assented:

"Will wonders never cease, prophetic words that may come true,
I'll speak to Mr. Carty and we'll call the moon for you."

A cloudless day on Wednesday combined with Pacific Company hospitality made the trip to Mt. Tamalpais with a barbecue luncheon under the redwood trees a complete success, as the enthusiasm of the returning Pioneers attested.

The climax of the convention came on September 23, when the Pioneers assembled in the American Telephone and Telegraph Company exhibit pavilion, and listened to Mr. Vail speaking to them from New York. Mr. U. N. Bethell and Mr. N. C. Kingsbury also greeted the Pioneers, and the regular program of the transcontinental ex-

Committee of Employees, The Pacific Tel. & Tel. Co., with operators from San Francisco Chinese Telephone Exchange waiting at Sacramento, California, for arrival of Special carrying Telephone Pioneers of America, September 20, 1915.

Pioneers in San Francisco being addressed by Mr. Vail by long distance telephone from New York

Telephone Pioneers of America Taken at "Old Faith

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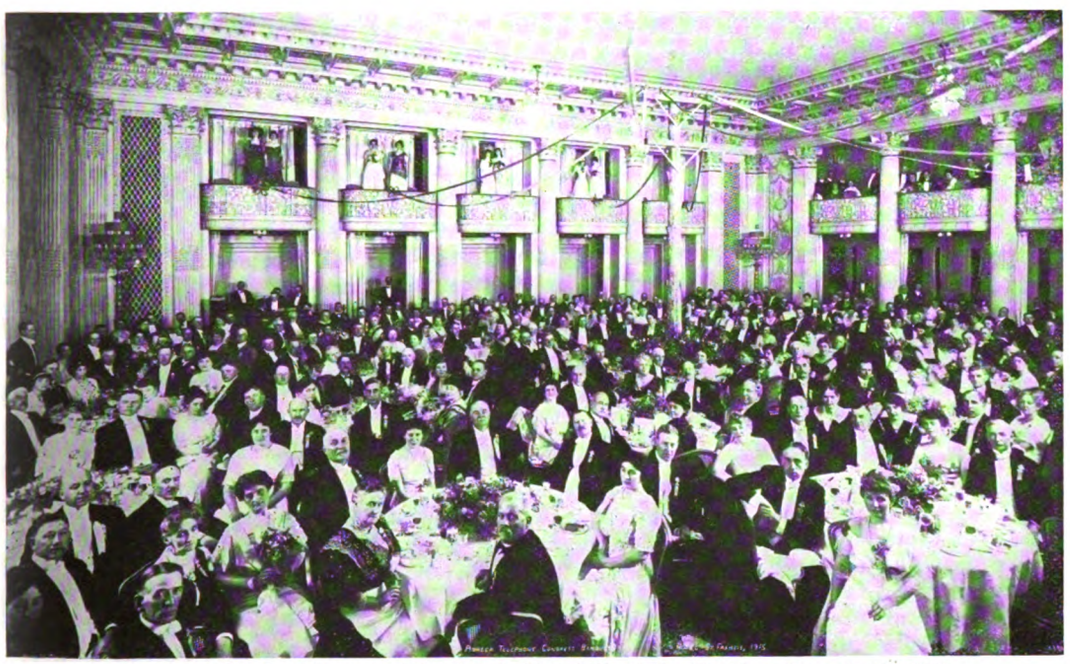
Entertainers representing Telephone Centers at Banquet of Telephone Pioneers of America, at San Francisco, September 21, 1915. From left to right—Minneapolis, New York, Savannah, Chicago, Old Lineman, Boston, St. Louis, San Francisco, Denver.



Banquet of Telephone Pioneers of America, St. Francis Hotel, San Francisco, September 21, 1915

Inn," Panama-Pacific Exposition, September 23, 1915

hibit followed. At this meeting, also, a bronze medal was presented to the Pioneers, in commemoration of their visit to the Exposition, by C. S. Scott, representing the Exposition directors. Mr. G. W. Peck, A. T. & T. Co. representative at the Exposition, presented to Mr. Scott a paper on the "Origin, Development, and Effect of the Telephone Industry," to be placed in the archives of the Exposition.

On the same day the Pioneers visited the "Zone" and lunched as the guests of the Pacific Telephone and Telegraph Company at Old Faithful Inn, an exact reproduction of that famous hostelry in the Yellowstone Park. Here the party had a group picture taken and then were presented with tickets to "The Panama Canal," the most novel exhibition on the "Zone."

In honor of this last day of the convention, the day which the Pioneers spent at the Exposition, the flag of the Telephone Pioneers of America was run up the great Oregon flagpole, a group of Pioneers standing cheering at the base, for it was the first time that any private organization had been so honored. The flagpole, the tallest in the world by nearly 100 feet, is a single piece of lumber 251 feet high. It was cut from a tree 347 feet high, contains 30,000 feet of timber weighing 96,400 pounds, and was transported from Oregon and embedded nineteen feet deep in 200 tons of concrete at a cost of $5,000. An illustration on another page shows the flag of the Pioneers floating from the top of this giant product of the Oregon forests.

The return trip was made through Southern California and the Grand Canyon. The party left San Francisco September 24, and stops were made as follows: At Del Monte, where the Pioneers enjoyed the famous seventeen-mile drive; Santa Barbara, where they visited the mission and other points of historical interest; Los Angeles, where two days were spent in sightseeing and entertainment. Visits were made to Riverside, Santa Catalina Island, and several beaches, to San Gabriel where the party witnessed a mission play performed under the direction of the monks; San Diego, where the Panama-California Exposition was visited, and some of the party went across the line into Mexico; and San Bernardino, where an interesting event not on the program occurred. Members of the party, hearing that Mr. and Mrs. Starrett had reached the twenty-third milestone on their journey together through life, had purchased a handsome silver service in Los Angeles, but had had no opportunity to present it when everybody could be present, and so they resorted to the ruse of stopping the train just out of San Bernardino, and, on the pretense of having a group picture taken, the gift was presented to the astonished couple. The next stop was at Albuquerque, a day was spent at the Grand Canyon, and at Kansas City the local telephone people gave the party an automobile ride around the city, and entertained them at dinner at the Blue Hill Country Club. On arrival at Chicago the local people again extended their hospitality to the party, after which the members took their several routes home. The New York party arrived October 6, after one of the most pleasurable and memorable experiences of their lives.

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The Telephone Society of New York

GROUP ON THE STAGE WITH MR. VAIL AT THE MEETING OF THE TELEPHONE SOCIETY OF NEW YORK, TUESDAY EVENING, OCTOBER 5, 1915

Seated (left to right)—Messrs. J. W. Johnston, C. S. Gleed, H. B. Thayer, F. H. Bethell, T. N. Vail, F. B. Jewett, H. C. Carpenter, G. C. Allen, U. N. Bethell, B. Gherardi, T. D. Lockwood, K. W. Waterson.

Standing (left to right)—Messrs. G. D. Milne, H. F. Thurber, Gerard Swope, H. Blair-Smith, R. H. Gregory, J. L. McQuarrie, G. E. Polk, H. A. Halligan, A. A. Marsters, T. P. Sylvan, J. L. R. Van Meter, J. H. Gordon, Jr., J. S. Wiley, H. S. Brooks, A. L. Salt, J. S. McCulloh, Ford Huntington.

THE audience which greeted Mr. Vail at the first meeting of the Main Society in New York this season was the largest ever gathered in the United Engineers Building except when Admiral Peary delivered his first address in New York after discovering the North Pole. There were present on October 5, 1,461 members and invited guests of the Telephone Society, and the ovation which they gave Mr. Vail was enthusiastic and prolonged.

As he entered the hall, the audience rose and gave him the following cheer:

(1)

BLUE BELL WE YELL
YELL YELL BLUE BELL
T. N. VAIL

(2)

THEO-DORE
THEO-DORE
THEO-DORE
Big Chief Reign from Shore to Shore
Roah Roah Roah Roah Roah Roah Roar
VAIL! VAIL! VAIL!

(3)

(Slowly) Who are we! who are we!
We are the boys of T. N. V.
(Faster) Chack chacker Chack chacker
Chack Chacker Chee!
(Fast) VAIL! VAIL! VAIL!

It was the first time that Mr. Vail had addressed a Telephone Society, and the distinguished consideration which he thus bestowed upon the New York organization must indeed be taken as a recognition by the highest authority of the work of the Telephone Societies throughout the System and of their aims and purposes. Such a recognition should put new life and enthusiasm into all of these organizations and make the societies greater sources of energy and inspiration in the future.

Mr. U. N. Bethell was heartily welcomed as an old friend when he rose to present Mr. Vail.

The meeting was the 162d held by the Main Society; the president, Mr. F. B. Jewett, presided. Before the meeting the Blue Bell Orchestra gave a concert in the main auditorium and played for the singing of the "Blue Bell Song" to the tune "America," in which the whole gathering participated.

The president announced two amendments to the Constitution to be voted upon at the next meeting in December, it having been decided to hold no meeting in November. The notice of the amendments read as follows:

1. It is proposed to amend Article III, Sec. 2, Paragraph (a) of the Constitution to read as follows:

(a) An Executive Committee, consisting of the three named officers and the Chairman of each Section (Article III, Sec. 1) ex-officio, and *nine* other members to be chosen by the Society.

2. And to amend Article III, Sec. 3, by the addition of the following sentence to the first paragraph:

"The Executive Committee shall have power to fill vacancies in its membership."

Forty new members of the Society were elected at this meeting.

The platform was occupied by officials of the American Telephone & Telegraph Company and Associated Companies.

After the meeting the audience gathered on the fifth floor, where an informal reception was held, with a musical program, consisting of selections by the Blue Bell Orchestra and the Blue Bell Glee Club, and songs by Mr. Coogan, interspersed with much cheering.

The Blue Bell Orchestra, L. A. Scott, Conductor

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The Blue Bell Glee Club, J. L. Turner, Leader

Rotary Club Banquet

IN the grand banquet room of the Hotel McAlpin, in Manhattan, members of the New York Rotary Club and their friends to the number of 425 sat down to their first dinner of the season at seven o'clock on the evening of October 5, while other Rotarians were on hand at Chicago and 300 more were rotating around the end of the transcontinental telephone line at San Francisco.

At 8.10 began the exemplification of Rotary. President Gettinger, of the New York Club and vice-president of the International Association of Rotary Clubs, introduced Mr. W. F. Schmidt, Special Agent, Advertising Department, and after his talk on "The Achievement of the Bell System—The Transcontinental Telephone," and the display of the transcontinental motion pictures, the line was opened by Mr. H. W. Casler, Division Advertising Manager, Metropolitan, and turned over to Rotarian M. J. King, District Commercial Manager, Murray Hill, who was master of ceremonies at the New York end of the demonstration. Mr. King extended greetings to Mr. Geo. W. Peck, Exposition Representative of the American Telephone and Telegraph Company, at the San Francisco end. President Gettinger and President Victor, of the San Francisco Rotary Club, conversed with each other and spoke briefly to the assembled audiences, and Mr. Harry H. McClaskey, of the Metropolitan Opera Company, rendered a tenor solo. Mr. Frank D. Waterman, vice-president of the Rotary Club of New York, who had made a special trip to Chicago for the purpose, introduced to both New York and San Francisco audiences Mr. Paul P. Harris, a prominent Chicago attorney and founder of Rotary. An address by Mr. Harris was enthusiastically applauded in San Francisco and New York. "Hello 'Frisco," the next number on the program, was sung by the New York Rotary Club quartet, to which San Francisco responded with "Auld Lang Syne." Mr. Belvedere Brooks, vice-president of the Western Union Telegraph Company, exchanged greetings with Mr. C. H. Gaunt, general manager, Pacific department, of the Western Union Telegraph Company; and Mr. George E. Roberts, assistant to the president of the National City Bank, New York, congratulated Mr. James K. Lynch, vice-president of the Wells-Fargo Bank at San Francisco, on his recent election to the presidency of the American Bankers' Association. Five brief chats between members of the same classification of business of the New York and San Francisco clubs were enjoyed by both audiences.

After the closing of the line the New York Rotary Club listened to remarks

Telephone Night at the Rotary Club of New York, October 5, 1915

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Table at the Rotary Club Dinner Showing Telephone Connection at Each Guest's Place

INSTALLATION FORCE, ROTARY CLUB

Standing (left to right)—J. H. DESMARAIS; J. N. ZEIGER; W. J. EILERS; I. AARONSON, Dist. Foreman; J. YOUNGBAUER, Foreman; J. McCOLL. Sitting (left to right)—J. T. FISCHER; H. RUSCHMEYER; J. E. McVAULEY; J. BUTLER; G. E. GLAUDEL.

by Mr. Guy Gundaker, former assistant superintendent of education, Philadelphia.

The task of equipping the banquet room of the Hotel McAlpin with 425 receivers, in order that the diners might listen to talks and musical numbers from San Francisco, was exceedingly difficult because a convention held in that room during the day did not adjourn until four o'clock in the afternoon. The Installation Force of Manhattan, however, was equal to the task, and in spite of the handicaps that confronted them the men gave a practical demonstration of the "Spirit of Service."

The usual practice on such occasions has been to run a line, concealed under the carpet, to each table. Because of the little time left after the convention dispersed this was impracticable, so it was decided to establish circuits by connection with support wires stretched at intervals across the upper part of the hall. To these support wires, coils of twisted switchboard wire were fastened at points directly above the tables, and the wiring was decorated with flowers and leaves. Terminal blocks to accommodate eight receivers were mounted upon boards about eight inches square, as shown in the accompanying illustration. These boards were loaded with lead and mounted upon small rubber bumpers to insure their staying in one place on top of the table.

As soon after four o'clock as the room could be cleared tables were brought in by the hotel organization, the installers in the meantime getting the coils of wire down from the support strands, and the florist set to work decorating the vertical wires. After the tablecloths were placed, a force of installers, each of whom had a diagram of the floor with his assigned tables marked upon it, picked up the material which had previously been assembled in paper bags and each proceeded with his part of the work. Every man had a typewritten sheet on which he was given minute instructions as to every part of his work. When the connections were finished, each man went to the end of the line of tables and at a given signal a listening test on each receiver was made. The room was cleared, work completed, receivers tested out, tables set, and the room ready for the diners at 5.40 P.M., a truly remarkable record job. The work was in charge of District Foreman Aaronson and Foreman Youngbauer, who were responsible for the design of the receiver terminal board, and the rapidity with which the job was completed.

President Gettinger's appreciation was expressed in a letter complimenting Mr. Schmidt, the lecturer, and Mr. Aaronson and his force. Of the latter he said:

> One of the best tests of coöperation is that made under trying circumstances, and surely this affair comes under that heading—but never a kick or a sign of grumbling could be heard—it seemed to me that the entire force at work were all of one mind—"We will and can make this a big success for our company."

Vice-President Waterman, on his return from Chicago, wrote:

> My associates here tell me that at this end it was a gala night for Rotary, and I am sure, from the state of mind of the members of the San Francisco Rotary Club, they carried through quite as enthusiastic an evening. I trust the Telephone Company will also benefit, exist long, and forever prosper.

Salesmanship in Ossining

ORIGINAL ideas of salesmanship are valuable. There is a great deal of ingenuity being exercised throughout the territory, and it is economy to pass along the product of it. Once isn't enough to use a good idea.

Mr. J. M. Reynolds, agent-in-charge at Ossining, makes this fine contribution to the record of advanced methods of salesmanship in the telephone industry:

> How I sold the last footnote on the last page of the Telephone Directory, making eighteen in all, turned out so well that I thought I would offer it to THE TELEPHONE REVIEW [he writes].
>
> All went well until the last one under "W" remained. Most of the subscribers listed on this page were residences with the exception of a hotel and a coal dealer, unsolicited. This was my last day, and the last footnote must be sold. I told the Local Commercial Manager I would sell it if I had to take it myself.
>
> The hotel refused, and the coal dealer—well, he "didn't know what good it would do him."
>
> "You will sell more coal," I argued.
>
> "What makes you so sure?"
>
> "Because your advertisement will ask people to buy of you; a question," I argued, "you never asked me, and no doubt many people in town are waiting to be asked."
>
> "Well," he said, "I will ask you *now*. Give me your coal order this winter?"
>
> "Certainly, you may have it."
>
> "All right. Thank you."
>
> "Give me your advertising contract?"
>
> He signed a year's contract, and our footnotes were all sold.

It's Always Ready for Us

MR. J. G. ORR, Local Manager at Jersey City, contributes this, which, he tells us, came from a Jersey City minister:

> "Like the baby needs the bottle
> We need the telephone."

It isn't specified whether the "we" refers to the ministerial profession or whether it is the all-embracing "we" of modern civilization. The simile is true in either case, and what is more, we have the advantage of the baby, for we don't need to cry for it.

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Edison Day Celebration

Distinguished Inventor Talks by Telephone for First Time in His Life

WHAT would you think if you were told that Thomas A. Edison had never carried on a conversation over the telephone?

You would immediately think of how extensively the telephone is used by everybody of your acquaintance, and conclude that such a statement regarding a man of Mr. Edison's eminence could not be true. Nevertheless it was true until the night of October 21, 1915, and this statement is made on the authority of Mr. Edison himself.

Not long ago a laborer working for the city of New York was absent for a day, and, when he was placed on trial for absence without leave, the judge asked him why he didn't telephone. The man replied that he had never used a telephone and did not know how. As a punishment he was laid off for a week and told to learn before he came back to work.

Mr. and Mrs. Thomas A. Edison Listening to a Diamond Disc Phonograph Record from West Orange, N. J. Mr. and Mrs. Edison Are on the Platform of the Auditorium of the American Telephone and Telegraph Company, Palace of Liberal Arts, Exposition Grounds, San Francisco, Cal., October 21, 1915.

Mr. Edison, however, will be pardoned for never having used the telephone before, and the occasion on which he first used it is of such great interest and importance that we shall describe it.

Mr. Edison was in San Francisco at the Panama-Pacific Exposition, attending the Edison Day Celebration in commemoration of the thirty-sixth anniversary of the invention of the electric light. His associates in Orange, N. J., wished to participate in honoring the occasion, so the long distance telephone line was called into service, and for the first time in his life Mr. Edison was to become a member of the world-wide army of telephone users. A program was arranged for the evening, in which Mr. and Mrs. Edison in San Francisco, their children, and a number of his business associates, gathered in the Edison Laboratories at Orange, and Mr. J. J. Carty, Chief Engineer of the American Telephone and Telegraph Company and President of the American Institute of Electrical Engineers, who was in Chicago, took part. When Mr. Carty spoke he was heard by all those present both in San Francisco and Orange.

One of the most unique numbers on the program was the transmission by telephone, from a diamond disc record, of an address by Mr. Miller Reese Hutchinson, his chief engineer, to Mr. Edison.

Among other things, the record said for Mr. Hutchinson:

By an invention of your friend, Dr. Alexander Graham Bell, speech can now be transmitted all over the world, and through the intermediary of your invention, the diamond disc phonograph, splendid records are being made of voices of great people, wonderful human songbirds, and renditions of famous musicians, all of which will be transmitted down the ages to the future generations of men and women whose great-grandsires have not as yet been born.

While you have been accomplishing many and great things in the comprehensive field of your activities, the personnel of the wonderful organization under Mr. Theodore N. Vail, head of the Bell System, and his illustrious chief engineer, Mr. Carty, have spent years of effort and millions of capital to reach the goal they have so recently accomplished.

Mr. Carty, who was listening in at Chicago, congratulated Mr. Edison on his achievements, and Mr. Edison said that he had heard very plainly the records which were transmitted over the telephone, and that he recognized Mr. Carty's voice and heard distinctly every word he said. Then Mr. Carty told Mr. Edison that he had great pleasure in announcing a new achievement of the Bell System—that at 12.25 that morning the engineers of the American Telephone and Telegraph Company and the Western Electric Company had successfully transmitted the human voice by wireless telephone from Arlington, Va., to Paris, France.

Mr. Edison said that he could hardly believe that anything so astounding had been accomplished, and added: "That is wonderful, that is wonderful!"

In reply to the greetings which he received over the telephone Mr. Edison continued:

It may seem strange to those who know of my work on the telephone carbon transmitter that this is the first time that I have ever carried on a conversation over the telephone. To talk across a line 3,400 miles on my first attempt at a telephone conversation seems to be a pretty big undertaking, but the engineers of the Bell System have made it easier to talk that distance than it used to be to talk thirty-four miles. In my research work I have spent a great many years listening to the phonograph, but it gives me a singular sensation to sit here in California and hear the new diamond disc phonograph over a telephone all the way from Orange, N. J.

After Mr. Edison and Mr. Carty had exchanged greetings, Mr. William H. Meadowcroft, of the Edison Company, talked to his chief in San Francisco and the two sons of Mr. and Mrs. Edison talked to their mother. What to Mrs. Edison was perhaps the greatest demonstration of the telephone, among all the impressive manifestations that had been given of its use, occurred when one of her sons eagerly and impulsively said to her:

"Hello, Mother, when are you coming home?"

The marvels of the scientific achievement become secondary to the human value of the instrumentality in bringing mother and son so close together across the continent.

The following telegram was received from Thomas A. Edison:

SAN FRANCISCO, CAL., Oct., 22.

J. J. Carty, American Tel. & Tel. Co., 15 Dey Street, New York.

Accept my hearty congratulations on your wonderful success in connecting New York and San Francisco by telephone and my thanks for the privilege of talking across the continent. I heard both the voice and music perfectly.

THOMAS A. EDISON.

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Remarkable Telephone Exhibit at Electrical Show

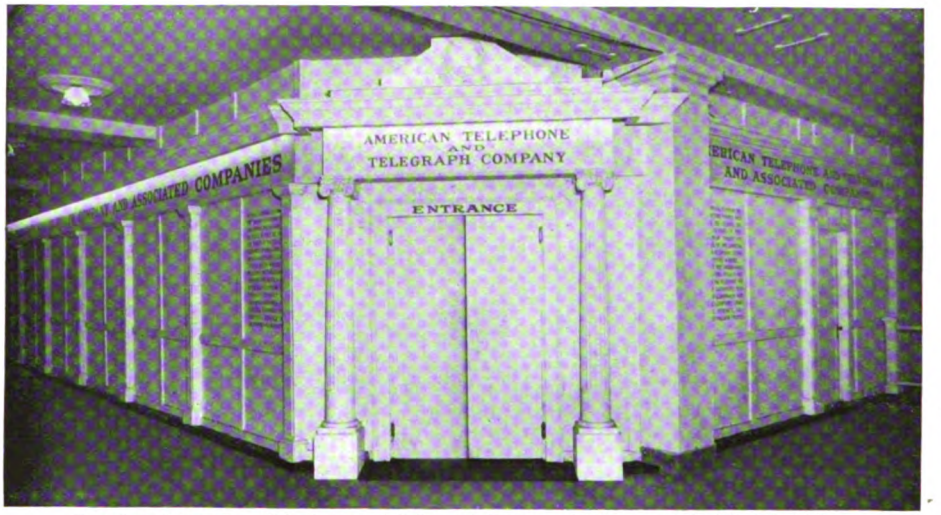
Transcontinental Demonstrations Thrill Thousands

A VISIT to the American Telephone and Telegraph Company's exhibit and demonstrations in the Electrical Exposition at the Grand Central Palace any day between October 6 and 16 furnished proof of the hold the transcontinental telephone line has taken on public interest and imagination. Interesting and attractive as were the hundreds of other exhibits, the A. T. & T. Company's was the popular feature of the show and far eclipsed anything else as a drawing card.

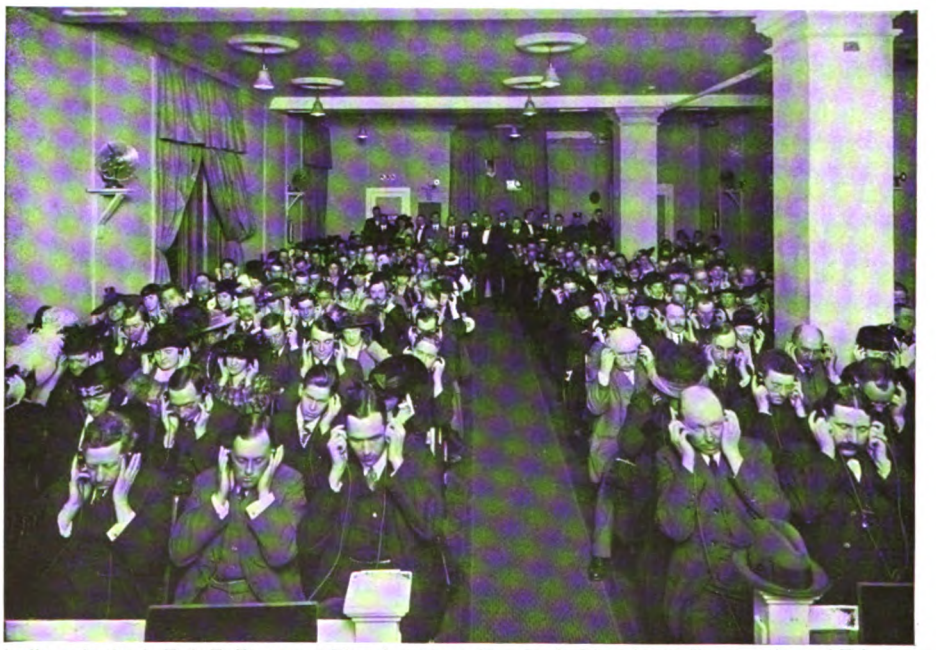
In spite of the fact that the demonstration was given eight times each afternoon and evening and the seating capacity of the little theater was 164, it not only was filled each time, but, at each performance, long before the doors were opened the line in waiting was far greater than could be admitted; hundreds were turned away and took their places in the new line and waited patiently till the next performance.

The program was entirely educational and was made up simply of lectures on the telephone and the Transcontinental line, pictures of the line, etc., and a demonstration of coast to coast telephoning, but the wonders of these things, the awe inspired by words coming over such a distance, and the thrill that came with being able to listen to a voice talking on the Pacific coast, were enough to attract and hold everyone, from the youngest school child to the most blasé man of the world.

The demonstration was held on the second floor of the Palace, in a room admirably fitted up for the purpose, with 164 seats, each equipped with double receivers. The program was given practically without change during the ten days. After an introduction by the lecturer, a duplicate of the original telephone invented by Dr. Bell was shown. Mr. Thomas A. Watson, Dr. Bell's assistant, appeared in a talking moving picture and told of the invention of the telephone and his part in its early history. Following this the lecturer gave an interesting account of the building of the transcontinental line, illustrating his subject with still pictures of President Vail, Dr. Bell, and Chief Engineer Carty, and moving pictures along the route, showing the surveyors, construction men and linemen at work, and giving glimpses of the principal cities through which the line passes, and afterward showing by moving pictures how a message is routed through the various exchanges from San Francisco to New York. The exhibition closed each time with a demonstration of the Transcontinental line, each one of the audience listening in as Mr. Henry A. Leslie, the A. T. & T. Company's representative at its exhibit in the Palace of Liberal Arts at the Panama-Pacific Exposition, San Francisco, told the latest news of the big fair, treated the listeners to a little music, and finally let them hear the waves of the Pacific ocean breaking on the California coast, at Cliff House Rocks. While the roar of the waves sounded in their ears, the audiences watched the very scenes whence the sounds were coming. In a beautiful moving picture the breakers were dashing upon the shore at Cliff House and sea-lions were frolicking upon the rocks and in the water, and through the telephone was heard



Exterior of American Telephone and Telegraph Company's Theater at the Electrical Show



Audience in the A. T. & T. Theater at Electrical Show, New York. Listening to Transcontinental Telephone Demonstration

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the actual lashing of the Pacific Ocean at that particular spot. The effect was startling and thrilling.

The exhibition was under the direction and control of the Commercial Department of the Long Distance Lines Department of the American Telephone & Telegraph Company.

The lectures were given alternately by Mr. R. W. Hicks, of the A. T. & T. Co., and Mr. W. F. Schmidt, of the New York Telephone Company, and much of the success and attractiveness of the demonstration was the result of their admirable presentation of the subject. Mr. George K. Thompson, assisted by L. D. Barrows, was in charge of the arrangement of the theater and its wiring. Mr. John G. Truesdell had charge of the wires and transmitters during the demonstrations. As head of the reception committee Mr. Henry C. Smith, of the Commercial Department, proved a courteous and efficient host to the many visitors, and was ably assisted by various members of the organization. In addition to the demonstration of Transcontinental Telephony the staff in charge gave another demonstration—that of the *esprit de corps* and teamwork which characterizes the Bell organization everywhere. Splendid attention to detail was shown at every point, for, in spite of a rather complicated program involving varied apparatus and requiring close attention and quick thinking, there was not a hitch during the ninety-six performances.

Hardly less interesting than the demonstration itself was the character of the audiences. Newspaper men were much in evidence, and during the ten days it was open the little theater was visited by hundreds of prominent scientists and well-known men of affairs. School children came in hordes, often under the care of their teachers, and sometimes astonished the demonstrators by the intelligence and scientific knowledge displayed in the questions they asked: "What is the amount of electrical resistance in these receivers?" queried one bright-eyed little investigator, and, fortunately, the lecturer was there with the answer. One afternoon enlisted men from the electrical class on the battleship *Maine*, in the Brooklyn Navy Yard, constituted the entire audience and hugely enjoyed the demonstration.

On the evening of October 14 the demonstration was attended by the New York Electrical Society, which held its 340th meeting in the demonstration room. Mr. Elmer A. Sperry, perfector of the gyroscope, presided, and Mr. Frank B. Jewett, assistant chief engineer of the Western Electric Company, gave an address on the recent long-distance wireless telephoning accomplished by the A. T. & T. Following this Mr. George W. Peck, Exposition representative of the American Telephone & Telegraph Company, talked to the members of the Electrical Society from San Francisco, and a program of lectures and pictures was given.

It is stating the case very mildly to say that the exhibit was a success, and it is difficult to estimate its very real and definite results. It would be hard to imagine anything that could bring the Bell System nearer to the people or help them more to see vividly the Bell ideals of universal service. It was a treat and an education, and it made many friends.

More important, perhaps, than this is the effect it is sure to have on the organization itself. Telephone employees were frequent visitors, and of the hundreds of them who saw and heard the great demonstration, it is safe to say that there was not one who did not go away with a better appreciation of the great system to which he or she belongs and a renewed inspiration to service in a very wonderful and noble work.

It is almost as difficult, but almost as important a work to bring together the various members of a vast organization, as to connect cities on opposite sides of a continent. No organization is at its best until its departments are brought together in mutual sympathy and appreciation. These transcontinental demonstrations have done much in this line. It is safe to say that no member of the Bell System attended them without feeling a greater appreciation of the work done by his comrades, wherever and in whatever department they were working, and a greater pride in the triumphs of the great army of which he is a member. The exhibit demonstrated more than a scientific achievement—it demonstrated the possibilities of splendid coöperation in public service.

REAL STRICTLIES

"Oh, yes, ma'am, the eggs is new laid! If you'll hold the wire I'll open the winder, and you can hear the hens cacklin'."—*Woman's Home Companion.*

Co-operation Again

IN the course of the past year there have appeared in THE TELEPHONE REVIEW several articles in reference to coöperation between departments. I would like to go still further into this subject. To the Commercial Department representatives, who deal directly with the public, the necessity of coöperation in order to give satisfactory service in dealings with the public is probably more apparent than to representatives of other departments who do not come in such direct contact with the subscribers.

Without meaning to find fault or criticize anybody, some employees seem to have the opinion that whatever is not absolutely covered by routine cannot be done, forgetting that the routine book has been compiled, amended, and added to, from time to time, by the very demands of the business, and the fact that it was to the best interests of the public to have their business handled this or that way, as the case may be. In many cases, although the routine may not absolutely cover a point in question, a little reading between the lines and a little judgment will probably show the intentions of the routine to make a satisfied subscriber or facilitate service.

Routine and system are necessary, and have to be, to have a well-ordered business, but these used without a little judgment I think sometimes will work out more to our detriment than to our advantage.

I have had two cases in the last year, not covered by routine at all, but which seemed to me should be, so that in the future in a similar case the point would be covered. I took the trouble to have my case treated in the way I thought similar cases should be treated to facilitate the handling of the business, and this method has since been incorporated in the routine. Therefore, let me try to impress the employees of all departments to coöperate with the Commercial Department to give the subscribers service, to mix a little judgment with the handling of the routine and be ever ready to suggest new routine to make easier the handling of the business or to satisfy the subscribers. If this is borne in mind, we shall be nearer the perfect coöperation.

H. HOWLAND, *Flatbush Commercial.*

No, Clarisse, in calling up Honolulu you do not say "Hello." You simply ask, "Hawaii?"—and the reply comes back over 4,900 miles of Bell Telephone air, "Pretty well, thank you."

IRRITABLE NEW YORKER—Get off the air; I'm talking to Paris.

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Rapid Transit Cave-ins

WHEN the first lead cable was run in the subways of New York City, those in charge began to teach the construction forces how to handle these new cables so as not to damage them. They talked something like this:

The cable is not to be kinked; it is not to be roughly handled; great care is to be taken in setting up cables in manholes; cable gangs should run the cable carefully; ducts are to be thoroughly cleaned so as to make sure that the cable sheath is not damaged when cable is pulled into the duct; the ends of the cable are to be properly sealed so as to prevent water from getting into the wires.

This teaching went on from day to day and gradually the force became sensitive where telephone cables were concerned. Indeed, it may be said that a telephone man is shocked when he sees a cable kinked or otherwise roughly treated.

Alas for these sensitive natures! Along comes the Rapid Transit Contractor! Bing! Crash! Smash! Over one thousand pick holes in the sheaths of cables along Lexington avenue and a few hundred breaks and other holes on Broadway, and now the Seventh avenue cables have dropped into the ditch. The Thirty-eighth street plant lies on the edge of a chasm.

Along Seventh avenue between Twenty-third and Twenty-fifth streets the contractor had excavated most of the rock and had placed wooden shoring to hold the water pipes, gas pipes, electric cables, trolley tracks and the street pavement. A new telephone subway had been built through Twenty-fourth street and iron pipes had been used to extend this subway across the excavation. There was a temporary manhole at Twenty-fourth street and Seventh avenue, the old plant being fastened to the shoring on the west side of Seventh avenue from Twenty-third to Twenty-fifth streets. New cable had been run in the new subways for the Farragut cut-over.

Seventh Avenue Between 24th and 26th Streets. General View of Damage Caused by Cave-in

On Wednesday morning, September 22, a little before 8 o'clock, Helper Trass entered the manhole at Twenty-fourth street and Seventh avenue to remove the tools from this temporary manhole and get everything ready for the splicer; he then stood on the sidewalk at the corner. About the same time Splicer Stillwell was coming down Seventh avenue from Twenty-sixth street to begin work in this same Twenty-fourth street manhole. Suddenly a section of the shoring holding the trolley tracks, street, gas, water, sewers, and telephone cables dropped into the bottom of the excavation—a distance of about thirty feet. Trass found himself looking into an abyss where formerly there had been a manhole. Gas, water, electric light, sewers, high pressure system, and trolley, all went out of business. But the telephone cables continued to give service. They lay beneath the pile of wreckage, crushed and battered, seven cables in all, four of which were important trunk cables. The tension on them was very great, especially at the ends of the break, where they dipped down into the wreckage; here they were as tight as drum strings.

Trass ran to a telephone and notified the office. Soon supervisors, splicers, and splicing foremen were on their way to the scene. However, no one, except firemen, was allowed in the ditch all day Wednesday. All we could do was to hope that things would not grow any worse. Late that night the contractor started to clean up. With his men was placed an efficient gang of Empire City Subway employees under Foreman Glennon. These men watched the cables and

Seventh Avenue Between 24th and 26th Streets Looking South. Telephone Cable Under Boxing to the Right

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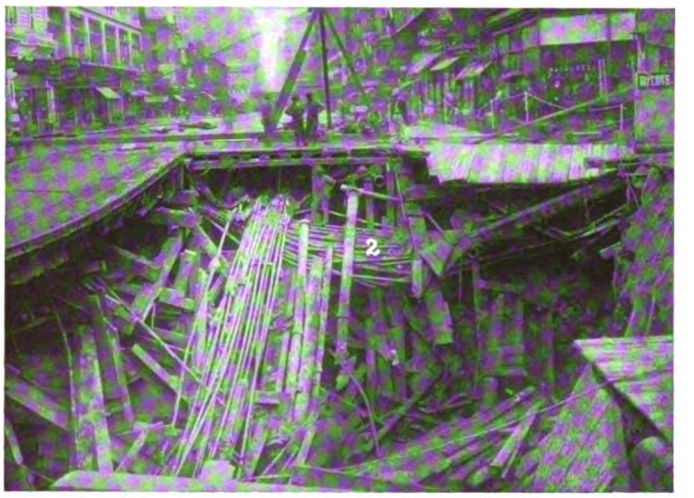
Seventh Avenue between 24th and 26th Streets. The telephone cable is seen hanging over iron beam and extending under boxing on top of broken water main.



Broadway between 38th and 39th Streets. Looking South. Telephone and Subway cables indicated at "2."

assisted in the removal of the pipes, traps, heavy beams, etc., from the ditch. As soon as the cables were exposed they were examined by our splicer, breaks were taped up and then the cables were covered with a strong boxing. The cleaning up was harder on the cables than the original drop into the ditch. Beams slipped from slings back into the wreckage, and pieces of tracks fell from the derricks and crashed down on the boxing, but the cables were so well protected that they were saved.

On Saturday night, when our sensitive natures had hardly recovered from the shock which the Seventh Avenue cave-in gave us, a large part of the shoring crashed down at Thirty-eighth street and Broadway. Our men hardly had time to reach home and get their suppers before telephone calls summoned them back to the city. Our subway pipes crossing Broadway at this point sagged down and bent, and couplings broke, but the telephone cables still gave service when all other plants went out of business.

We are trying hard to keep ourselves true to the teaching of all of our bosses in regard to the care of telephone cables, but under such conditions it is difficult work. At any rate, we are proud of these cables, which continued to serve the public at such important times.

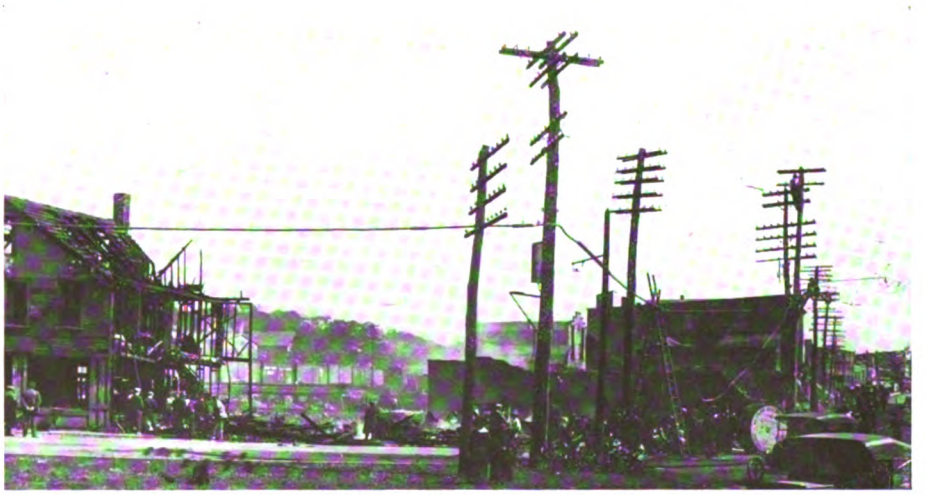
Willing and Resourceful Public Servants

A SEVERE fire broke out in one of the principal business blocks of Suffern, N. Y., at 2 A.M. on September 29. No sooner was it seen that the fire was making headway and threatened to prove serious, than the departments of the Telephone Company came into action with the usual promptness and clearheadedness with which they meet emergencies of every sort.

The local fire department appealed to Mrs. Jessie Demarest and Miss Elizabeth Barnes, the operators on duty at the exchange, to summon aid from neighboring towns. The Allendale, Hillburn, Nyack, Ramsey, Ridgewood, Spring Valley, and Tuxedo fire departments were called at once and were soon on the scene of action. One Nyack truck made the run of fourteen miles in thirty-one minutes.

Miss Augusta Fromm, evening operator, was awakened by the fire alarm, and hurried to the central office to help the night force. Miss Ella Ernst, day operator, also came to the exchange to assist with the large volume of traffic which loaded the wires as soon as the fire broke out.

Meanwhile the Plant Department had been getting into the fray just as rapidly. Shortly after the fire was discovered, Division Construction Supervisor Kent was called by General Foreman Sheldon of the Rockland District, who was on his way to Suffern. Our 300-pair cable, carrying all the trunks to Tuxedo and points beyond and subscriber lines for a large part of Suffern and all of Hillburn, was in danger. About 3 A.M. the Nyack Chief Operator, Miss R. E. McBride, notified Mr. Kent that northern trunks were failing, and a few minutes later he received word from General Foreman Sheldon that our cable was going for three sections. Then the word was passed for District Supervisor Evans and Foreman Rockhold to go ahead. Mr. Evans called out Foreman McDonnell and a chauffeur and, with a Ford car, rounded up a gang of construction men at the Nyack office, where Mr. Sheldon and his Wire Chief, Storekeeper and Trouble Force assembled. Mr. Evans sent Foreman McDon-



Transferring Wires from Old to New Poles. Suffern Fire

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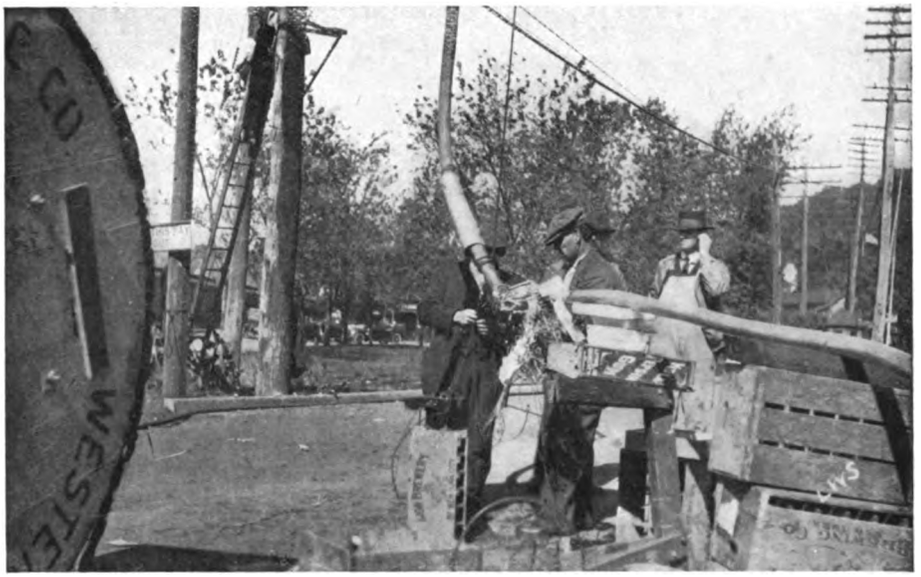
nell and a squad of men with a 5-ton auto truck to Piermont to pick up a reel of 300-pair cable. The rest of the gang loaded a 2-ton Mack with constructional and splicing material and started for Suffern.

Three sections of cable at Suffern were down, and burned, and two poles were so badly charred they were unfit for use. By cutting the cable ends clear and far enough back to get beyond the water, the men restored service to some of the Suffern subscribers in the bridged part of the cable.

While Mr. Evans was handling the construction, Mr. Rockhold was very busy getting the splicers, helpers, and their tools, to the scene. Owing to the early hour, the ferries between Tarrytown and Nyack, and Dyckman street and Englewood were not running, so it was necessary to cross the river at the Fort Lee Ferry. By 10 A.M. the straight splice was completed. Thanks to good helpers and a sturdy Ford, lines began to be restored about 11.45 A.M., and by 10 P.M. the trunks and all but seven subscriber stations were back in service. In all, twenty-three trunks and 144 subscribers' lines were affected. For a time the work of testing the lines had gone very slowly because so many people were at the fire that few were at home to answer the telephone.



Making an Emergency Splice After the Suffern Fire

The fire burned from 2 A.M. till 6 A.M., destroying eleven stores and living apartments. The prompt action of the operators in summoning assistance from the fire departments of other towns before the cable was burned, undoubtedly saved Suffern a far greater loss. When the people of Suffern had somewhat recovered from the first shock of the fire, on every corner could be heard comments on the initiative and resourcefulness of our operators. The cable gang also came in for a large share of praise for the rapidity with which they replaced the burned cable. The flying fingers of the splicers proved to be a never flagging source of interest. One of the onlookers remarked, "I thought my wife could knit, but those men have got her beaten forty ways."

As Mr. Kent says: "The men worked hard, with no thought of personal discomfort. In fact, every one showed the true telephone spirit and I believe that this is the highest praise that can be given to an employee of the Telephone Company."

Nyack Employees Handle a Fire Emergency

SCARCELY had the Rockland District recovered its breath after the Suffern fire when Nyack afforded further excitement. On October 13, at 11.45 A.M., fire broke out in the large department store of Harrison & Dalley on the main street of the town. The proper fire alarm signal was sent in from the central office as soon as the store notified the operators, and Mr. Rossborough, local commercial manager at Nyack, called the fire companies of Piermont, Sparkill, West Nyack, Spring Valley, and Suffern.

Heroic efforts were made to confine the flames to one building. Powerful streams were poured into the flames, but apparently to no avail. The storekeepers on both sides of the doomed building rushed their books, ledgers, and all movable articles of value to the fireproof building of the New York Telephone Company, across the street. In a short time the Commercial office was piled high with all sorts of stock. An applicant for service could not have been blamed if he had mistaken the office for a drug store, as prescription ledgers, scales, and valuable chemicals of all sorts were piled on the desks.

View of the Nyack Fire

Our Plant and Traffic Departments showed their usual resourcefulness. Miss Ethel Wootton, day operator, and Miss Mary Higgins, night operator, anticipating a "heavy load," volunteered their services and helped handle the tremendous increase in the noonday traffic. Of this extra load 152 calls were "curiosity calls," asking the location of the fire.

The Plant was called on to replace a 50-pair cable running in the rear of the burning building. Thirty-two working lines, serving 40 stations, were affected. The destruction of this cable crippled half of Nyack's business houses, but 17 lines and 19 stations were O.K.'d in less than an hour after the fire broke out, and by 5.30 P.M. all lines were restored, in spite of the fact that the roof of the burned building caved in and temporarily delayed the replacing of the cable.

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LAMPS AND KEYS

By Dorothy Thorne

The Business of Being Well

"THERE goes twenty-five cents for a jar of salve that I probably won't use more than three times." The trace of discouragement in Mary's voice deepened a little, but it almost disappeared as she turned from the counter and linked her arm in Ruth's. Mary, a stenographer for one of the prominent business men of the village, often had to rely on Ruth to cheer her rather somber spirits. Ruth was an operator in the telephone exchange, and her "voice with the smile" was not for switchboard use only. It was always ready.

"Why such extravagance?" she asked.

"That burn I got on my hand last night when I was pressing my suit nearly cuts my speed in half," Mary responded, "so I have to get it healed up as soon as I can. But *why* doesn't salve come in smaller jars? Why should I have to blow in a quarter for the use of three cents' worth of salve?"

"Let's advertise for someone to buy the rest of the jar at a tempting bargain," Ruth suggested with a twinkle.

"That's helpful advice," commented Mary. "Why don't you offer to buy it yourself? You never can tell when you'll need it. No home complete without it, et cetera, et cetera."

"I'll certainly recommend it, but I don't need it myself. Our central office matron has all sorts of things like that to fix us up if we ever need anything. She looks out for the clerks and stenographer down in the commercial office, too, though none of us need it very often. But when we do, balm and bandages, salve and sympathy, are always ready. Regular first aid to the ailing. It's great."

By this time they had gone nearly out of hearing, but a bystander, who was watching, noticed that the spirited little Ruth had already injected some of her cheerfulness into her friend's rather discouraged air. It was a good sight to see.

"First aid to the ailing." Ruth's name was a good one for the provision the Company makes for all of its employees in case of any minor indisposition, which, treated at the outset, may be stopped, or prevented from becoming serious. How much this simple precaution saves to the employees, both in money, which might have had to go for witch-hazel or salve like Mary's, or even doctor's bills, and in physical discomfort and suffering, is quite beyond the power of any mathematician to estimate. And the reflex of this, of course, is the benefit to the service and to the Company, in the maintenance of higher standards of physical excellence and the prevention of lost time.

Every central office matron is provided with simple remedies, and employees of any department are free to go to her for any "ounce of prevention" that is needed.

Mrs. M. H. MacDermott

It is so throughout the Company. At Dey street, however, there are so many employees gathered together that special provision is made by the Employees' Benefit Fund Committee. This special provision is Mrs. MacDermott and her office.

Mrs. MacDermott is a trained nurse, and to her office, at 15 Dey street, any of the employees in the two buildings where the main offices of the Company are situated, may come for whatever treatment they are in need of. She is always there, and she and her office form a comforting refuge for anyone who needs "balm or bandages, salve or sympathy."

The neat glass shelves with uniform bottles look like a corner of a hospital, and what Mrs. MacDermott can do with those bottles and the other equipment, and her sane, strong spirit and calm voice, is a miracle.

If you get to the office and find that a headache you started the day with doesn't vanish in the morning sunshine, what do you do? Just go to Mrs. MacDermott, and in half an hour, perhaps, she will send you back to your work with the headache gone or fast disappearing. A good deal pleasanter than having your mind more occupied with the ache than your work, and finally having to give up and go home to devote yourself to being miserable! Or, if the headache should perchance be a token of something more serious—as it may be even in these "germ-proof" days—Mrs. MacDermott will tell you so. You can go to your own doctor or, if you prefer, the visiting physician who comes to Mrs. MacDermott's office on certain days will treat you. But with Mrs. MacDermott at hand you never have to take time or money to run to the doctor because you think perhaps a cold you acquired at the movies last week may be turning into bronchitis. Mrs. MacDermott can tell whether you should see a doctor, and if you see her at the start, further steps will usually be unnecessary, for she has a way of fixing everything up with such a comfortable, satisfactory sureness that troubles flee.

This is the opportunity that is given us to keep our physical endowments at their best. Are we all using that opportunity? To use it whenever we have the slightest need for it is the only demand this provision of "first aid" makes upon us. But it is a very real demand. No one has a right to neglect his health. There is no room or time on this busy planet for anyone to be ill needlessly. Every person has something to accomplish, and to accomplish it in the very best way possible, as it should be done, the physical powers have to be in the best condition. The common duty of every human being to keep his physical powers at the top notch of excellence is made easier for us, who work under the Blue Bell, by this provision; are we making the most of it?

Bricks Without Straw

THE details of an example of good service in an unusual situation show something more than the creditable work of those who performed it; they show *how* the success was won; they give the rest of us good, practical pointers to use.

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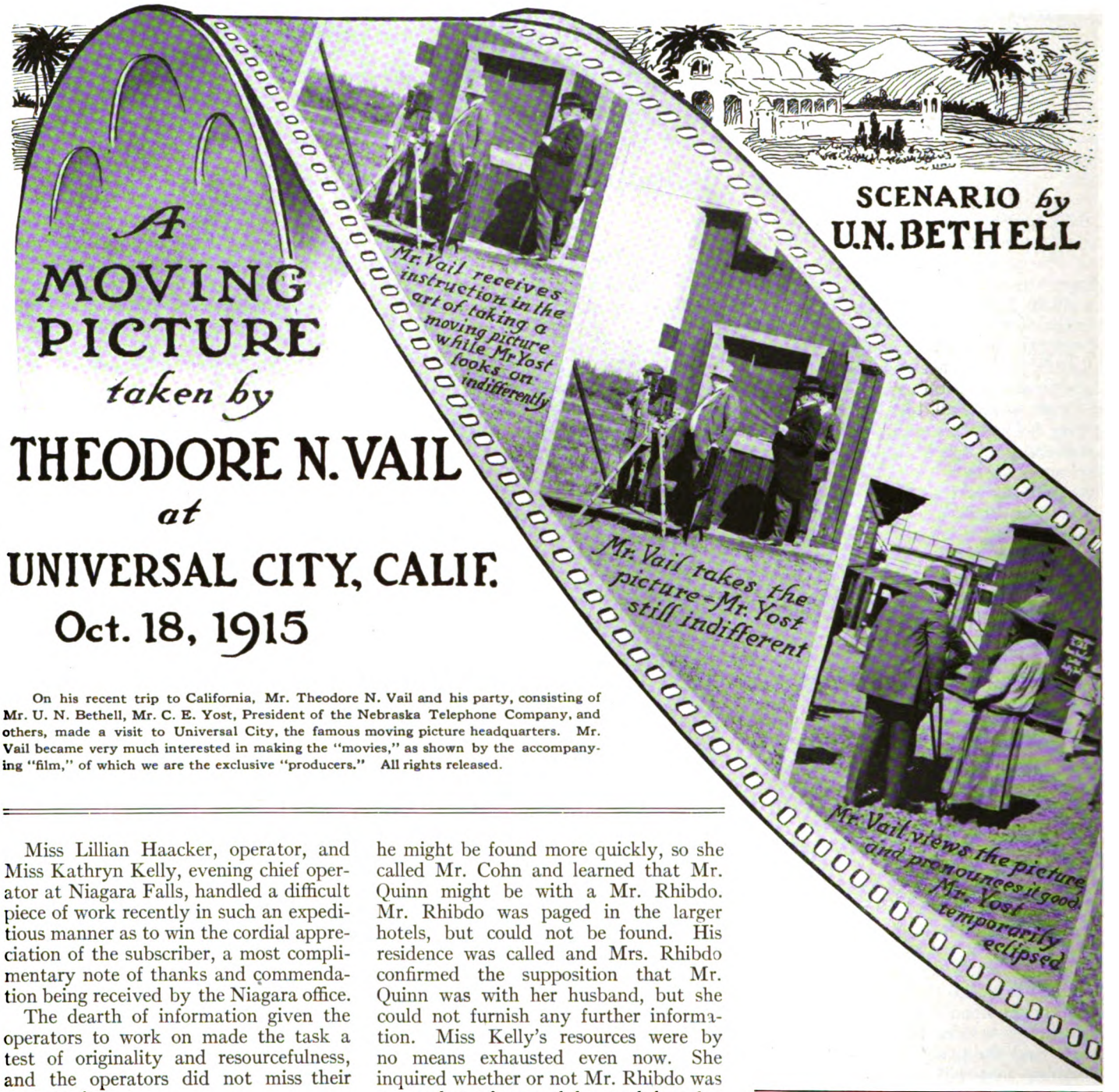

On his recent trip to California, Mr. Theodore N. Vail and his party, consisting of Mr. U. N. Bethell, Mr. C. E. Yost, President of the Nebraska Telephone Company, and others, made a visit to Universal City, the famous moving picture headquarters. Mr. Vail became very much interested in making the "movies," as shown by the accompanying "film," of which we are the exclusive "producers." All rights released.

Miss Lillian Haacker, operator, and Miss Kathryn Kelly, evening chief operator at Niagara Falls, handled a difficult piece of work recently in such an expeditious manner as to win the cordial appreciation of the subscriber, a most complimentary note of thanks and commendation being received by the Niagara office.

The dearth of information given the operators to work on made the task a test of originality and resourcefulness, and the operators did not miss their opportunity.

Mr. Morris Cohn, Jr., of Niagara Falls, counsel for the International Railways, placed a call for a Mr. Quinn at Buffalo, who had been a guest of Mr. Cohn during the afternoon. An important telegram had come after his departure and it was necessary to reach him by telephone, although the only available information was that he was to be in Buffalo until eleven in the evening, when he was to leave for the West. Miss Haacker had Mr. Quinn paged in several of the principal hotels and restaurants in Buffalo, but without success. This report was given to Mr. Cohn and the call was then referred to Miss Kelly.

If Mr. Quinn was with someone well known in Buffalo, Miss Kelly thought, he might be found more quickly, so she called Mr. Cohn and learned that Mr. Quinn might be with a Mr. Rhibdo. Mr. Rhibdo was paged in the larger hotels, but could not be found. His residence was called and Mrs. Rhibdo confirmed the supposition that Mr. Quinn was with her husband, but she could not furnish any further information. Miss Kelly's resources were by no means exhausted even now. She inquired whether or not Mr. Rhibdo was a member of any clubs, and learning that he belonged to the Buffalo Club, she was in possession of another good clew. This time it was the right one, for Mr. Rhibdo was found at the Buffalo Club, where Mr. Quinn was his guest, and the desired connection was immediately established.

Mr. Cohn's note of appreciation rings true:

NIAGARA FALLS, N. Y.

New York Telephone Co., City:

One of your local Buffalo line operators displayed an efficiency in locating a gentleman in Buffalo by 'phone for me this evening that would do credit to the German army, and I want before I forget a too often forgotten duty to express my appreciation of the service rendered.

Very truly,
MORRIS COHN, JR.

"A Gentle Intonation"

Miss Anna Bigley, West operator in Albany, has attained unusual perfection in the development of "the telephone voice," if we may judge from the action and words of a subscriber whom she serves. The very practical tribute of a five-dollar gold piece was sent to Miss Bigley by the appreciative subscriber, and a note which suggests how gratefully Miss Bigley's voice must have sounded on the ear of the subscriber. He writes:

"As Cooling Waters to the Thirsty Roe, So is a Gentle Intonation in the Telephone."

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Lest We Forget

By Florence G. Carncross, School Manager, Hudson Division

HAVING attained a certain standard of efficiency, it should be our aim not only to maintain it, but if possible, to increase it—in other words, we should always be working toward a betterment of present conditions; if this is our ambition, it means unceasing vigilance; at no time can we relax. Close application, study, and thought are the factors involved in bringing about a realization of this ideal, and perseverance is a necessary adjunct to prevent retrogression.

Many things are to be kept in mind if we desire to achieve the best results, and, while there is no doubt regarding the sincerity of each and every one, it may not be amiss to enumerate a few important points that might from time to time be overlooked, though not forgotten.

Development of individuals is of prime importance. There should be an understudy for practically each position. If the force is small, at least one of the number should have a thorough knowledge of everything pertaining to the work and the people engaged in performing it. In connection with this, it is of the utmost importance that these employees also be trained to assume responsibilities and, when necessary, to take the initiative.

Discipline is so essential to the service it seems unnecessary to refer to it, further than to point out that the enforcement of rules and regulations should be modified or lived up to, depending on the size of the organization and the conditions existing in the different offices.

Coöperation—to paraphrase—is like charity, it covers a multitude of defects; with this thought in mind it is well to further the habit to the utmost—not with the thought of concealing or covering, but with the idea of assisting to the extent of making up for the weaknesses or inexperience of others. This spirit should be fostered not only in the different departments, but also among ourselves.

Knowledge of the three R's, viz., Rules, Regulations, and Routine, should be thorough, and, in addition, we should know our people. Chief operators cannot get the greatest efficiency out of their forces, nor can supervisors do justice to the members of their divisions, unless they know the individuals. The little personal relation existing as a result of this knowledge enables those in executive positions to keep in touch with conditions that may be of interest.

Supervision affords such a wide scope that I think it should be handled as a subject by itself. I do feel, however, we should keep in mind that supervision applies not only to operating methods and practices, but that it also should be exercised, so far as is possible, over individuals in their business lives and environments.

The arrangement of the force has an important bearing on the service. There is sometimes a weak place in the organization that, if overlooked, results in disaster more or less serious. This can be avoided by reinforcing. In other cases it involves a change in the layout for the purpose of "balancing" more evenly. The interchange of ideas is, to a great extent, coöperation. If at any time we have a thought, or a practice that works out satisfactorily, or betters a condition, why not pass it along? The fascinating part of our work is that there is always something to learn—we never "know it all." This being generally conceded, why not coöperate in the finest sense of the word, by giving everyone an opportunity to benefit by that which may have helped us?

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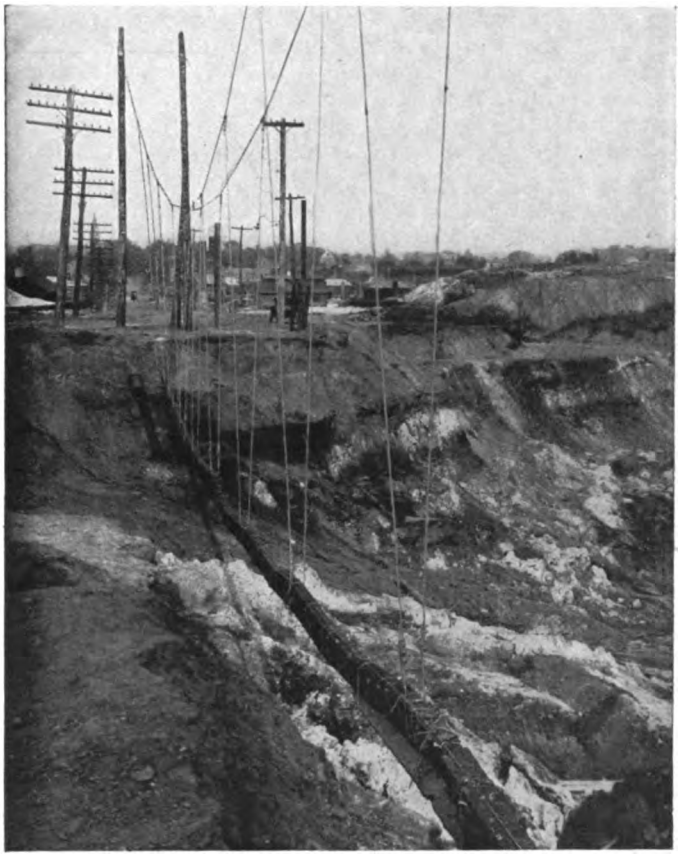
Underground Conduits Suspended in Mid-air for 200 Feet

By H. E. Smith, District Engineer, Newark

THE part of the New York-Philadelphia subway passing through Woodbridge Township, New Jersey, was built in 1905. West of the village of Woodbridge the subway, which consists of eight ducts of multiple duct tile, passes through a section consisting almost entirely of clay pits. In fact, when the subway was built a few sections were built on piling directly across a clay pit, as the road was being straightened at this point. In 1913 a property owner owning clay beds each side of the public road in which the New York-Philadelphia subway was located obtained permission from the Township Committee of Woodbridge Township to reroute the road for a period not to exceed three years, in order that he could excavate for clay under the original location of the road. No notice was given the New York Telephone Company of the contemplated changes and we were therefore very much surprised late in 1913 to find that our underground conduit at this point had been exposed and undermined.

During the early stages of the work the foreman of the clay diggers arranged to support the telephone conduit temporarily. However, the foreman's idea of proper support for telephone conduit appeared to us to be entirely inadequate. We therefore removed the multiple duct tile and placed split creosoted wood tubing over the two cables, with planks on top and bottom. The ducts and cable were then suspended from two 16,000 pound guy stands placed as shown in the fifth and sixth illustrations.

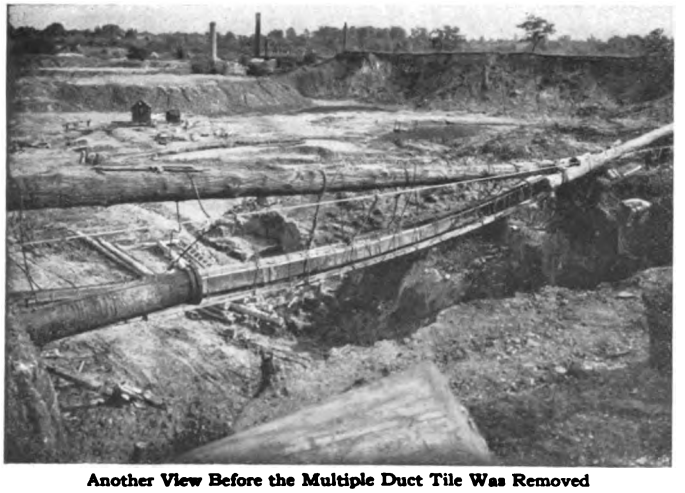


Temporary Conditions as of May 1, 1915

The conditions shown on the first, second, and third photographs are practically those that existed March 1, 1914, after the sleet storm destroyed most of the toll wires in northern New Jersey. For almost two months after March 1 the two toll cables running through this subway carried all of the telephone circuits running southwest from New York. We were naturally somewhat anxious as to the safety of our ducts and cable.

To one not familiar with the work, maintenance of underground conduit often appears to be a negligible item, or its importance is underestimated. The work being done in Woodbridge is an excellent example of the cost of this maintenance. The conduits are still in the condition described, and are likely to remain so for at least another year. In cities we naturally expect to do a great deal of rearranging and changing underground conduits because of the construction by municipalities of rapid transit subways, sewers, water pipes, etc., but this situation in Woodbridge is a striking evidence of the fact that even along country roads we are required to make changes in our underground circuits which involve a very considerable expenditure of money, time, and ingenuity.

H. E. SMITH, *District Engineer, Newark.*



Another View Before the Multiple Duct Tile Was Removed

Before the Multiple Duct Tile Was Removed

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Teaching the Public to Know Us

WHAT county fairs always have been in rural districts are what expositions and shows have become in the larger cities—which probably goes to prove that human nature is much the same everywhere. There is something to be said about county fairs, too, which could never apply to the indoor and usually congested exposition, and that is, their annual recurrence is looked forward to by thousands of people widely scattered, who enjoy the sociability and profit by the exhibits in a degree which is both recreating and educational.

The popularity and success of these county fairs may be slightly indicated by the attendance; for example, at Riverhead, L. I., September 14 to 17, there were about 35,000 admissions; at Mineola, L. I., September 21 to 25, about 112,000, and at Batavia, Genesee County, N. Y., September 21 to 25, nearly 40,000.

One of the accompanying illustrations shows the Company's float in the Industrial Parade at the New York State Fair at Syracuse. The photograph from which this cut was made was shown by Mr. Bethell to Mr. Vail, and Mr. Bethell wrote a memorandum regarding it in which he said: "I have shown this to Mr. Vail and he thinks, and so do I, that this should have taken first prize." The credit for this float belongs mainly to the Plant Department, Syracuse.

New York Telephone Company's Float in Carnival Parade at the Syracuse Fair

Another illustration shows the exhibit at the Riverhead Fair, September 14 to 17. The success of this exhibit was due largely to the efforts of Mr. E. J. Saddington, Agent-in-Charge, and Mr. William Hutton, Jr., of the Advertising Department, Metropolitan Division. A gold medal was awarded to the Company for the best decorated booth on the grounds. The booth, it will be noticed, was a reproduction of the Blue Bell. It was 15 feet high and 16 feet in diameter at the base, and was mounted on a platform 20 feet square; the finish was bell blue, the letters and bands being in white. Inside the enormous bell were installed a monitor switchboard, an intercommunicating set, and all types of switches and bells and other standard equipment. There were also telephone pay stations for the use of the public, so that the interior comprised an office, exhibition hall, and public telephone station. Three coin boxes were located at different points on the grounds. At Mineola, a booth 20 x 10 feet was erected in which five receding door booths equipped with prepayment coin boxes were installed. Mr. F. E. Babcock, local commercial manager, Hempstead, was in charge of the exhibit, being assisted by Mr. Hutton.

Exhibit at the Riverhead Fair, Which Took First Prize

Another local manager who has acquired the advertising spirit is Mr. A. M. Forster, of Batavia, who planned the exhibit and was in charge of the Company's interests at the Genesee County Fair held in Batavia, September 21 to 27, inclusive. Six stations were installed at the Fair Grounds, two being located in the Company's exhibit, and the others in

Highest Award for Our Exhibit at the Riverhead Fair, 1915

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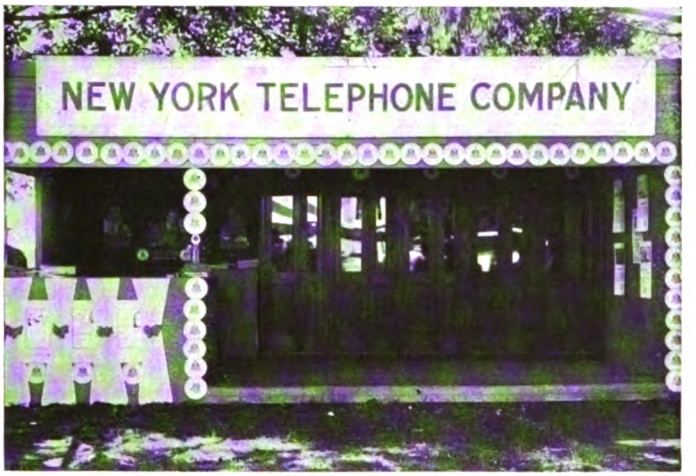
the Secretary's office, ticket office, grange building, and the Emmanuel Baptist Church restaurant. The station in the grange building was used also by the Emergency Hospital adjoining, an emergency bell being installed in the latter. The accompanying illustration is from a photograph furnished through the kindness of Mr. Thomas, one of our subscribers in Batavia.



Booth at Mineola Fair

Exhibit at the Genesee County Fair, Batavia, N. Y.

The 30th Annual White Plains Fair and Westchester County Horse Show was held September 29 to October 2, and was a pronounced success. The local Commercial office, assisted by Mr. A. V. Sedgwick of the Advertising Department, Metropolitan Division, was responsible for the display.

New York Telephone Booth at the Hamburg Fair

The Erie County Fair held at Hamburg, N. Y., September 14 to 17, afforded another illustration of the splendid advertising qualities possessed by some of our Commercial representatives. The Company's exhibit was installed under the direction of Mr. W. L. Mason, local manager, Hamburg. An interesting incident in connection with the exhibit was that the distribution of Telephone Company fans was discontinued during the lunch hour, but when Mr. Mason returned, he found all those he had used as decorations had been taken by visitors. The popularity of these fans was further indicated by the men in charge of cleaning the grounds, who said that during the whole week they did not find fifty that had been thrown away, and by the fact that in villages all around Hamburg fans were found in the homes and stores.

These occasions afford exceptional opportunities for the distribution of the Company's advertising literature, and live and resourceful representatives of the Company are able to render valuable service by answering questions, explaining misunderstandings, and giving information to the public.

The other illustrations accompanying this article were made from photographs of the float and the exhibit at the Industrial Show in Buffalo, September 22 to October 2. Everyone knows, but not every-one thinks, about the Bell, and these and all other such means of directing the attention of the public to our service are of inestimable value. It has become a truism, however, that the best advertisements of the Company are its employees.

Float in the Industrial Parade, Buffalo

Booth in Industrial Show, Buffalo

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The TREND of REGULATION

By R. V. Marye, General Attorney

Public Convenience and Necessity

THE Missouri Public Service Commission, reviewing the provisions of the Public Service Commission Law of that State, prescribing the terms upon which a corporation may begin the construction of a railroad, says, among other things (in re Kansas City Connecting R. Co., May, 1915), that the statute evidences a radical change in the policy of the State. In the early history of railroad building counties and municipalities were authorized to vote bonds in aid of construction, and even the State itself rendered financial aid. Now, however, before a railroad corporation can begin construction it must secure a certificate from the Public Service Commission that public convenience and necessity require such construction. The Commission holds that the Legislature, by imposing this condition, necessarily implied that the building of a railroad, even when the promoters are willing to invest their own means in the enterprise, is not always for the best interests of the public, the test being present or future public convenience and necessity, and, that the requirement of the finding of necessity as well as of public convenience further implies that if another utility is adequately rendering the service proposed or is able and willing or may be required to do so, then the necessity would not exist and authority for the construction of the new railroad should be refused.

Unprofitable Extensions

THE Maryland Court of Appeals in Public Service Commission *vs.* United Railways and Electric Company of Baltimore, held, on June 24, 1915, that the Commission may not compel an electric railway company to construct and operate an extension of its line where such extension and the equipment and construction thereof in the manner directed by the Commission would, in the honest judgment of the directors of the company, result in annual loss from operation, for the Commission cannot so control the discretion of the directors of a utility. The court states further that the Commission can exercise only such powers as the law has conferred on it and that any order of the Commission not within the authority so conferred is unlawful.

Deposits as Security for Payment of Bill for Services

THE Public Service Commission of California on August 12, 1915, having investigated upon its own initiative the practices among the utilities of the State as regards charges, deposits, contracts or guarantees for service, service connections and extensions, prescribed rules and regulations to be observed by the utilities of the State. Said rules provide, among other things, that utilities may require a prospective customer to establish credit for services to be rendered to him and that such credit shall be deemed established if the consumer (1) owns the premises, (2) makes a cash deposit, (3) furnishes a guarantee satisfactory to the utility, (4) has paid all bills promptly for a period of twelve months prior to the effective date of the order. It is further provided that if a deposit be made it shall not exceed twice the average periodic bill of the particular class of consumer paying it and that for domestic or residence monthly service it shall not exceed $2.50, and that consumers receiving service under other than cash deposits who default in payment may be required to guarantee future bills by cash deposits, and that if consumers with cash deposits default in payment the amount of their bill may be subtracted from the deposit and demand made by the utility that the deposit be restored to the original amount. Provisions are also made for the discontinuance of service for failure to make the necessary deposits, on condition that written notice of intention to discontinue is given within times fixed by the decision.

Free Service to Municipality

THE Railroad Commission of California in Town of Hollister *vs.* Hollister Water Company, on June 21, 1915, held, among other things, that it had power to prescribe the charge to be paid by municipalities for water for fire protection despite the fact that the franchise ordinance under which the company operated provided that the city should always have water free for such purposes. The Commission states that the furnishing of free water to a city as prescribed by the ordinance would impose an unjust burden upon regular consumers, who would be compelled, through increased rates, to pay for water so used by the city.

Rates to Clergymen

THE Rev. R. Desroches had his telephone listed as "Presbytère Notre Dame de la Garde," and had been paying a residence rate therefore, but was notified that henceforth he would be charged a business rate. This telephone, besides being used for strictly residential purposes, was also put to the use that any clergyman in charge of a parish would make of a telephone.

The Board of Railroad Commissioners of Canada on July 8, 1915, held that as presbytery means merely a residence of a clergyman in charge of a church, it was immaterial whether the telephone was listed in the clergyman's name or in the name of the presbytery; that it was not necessary to decide whether or not the use made of the telephone in question was a business use, since the equality clause of the Railway Act had been violated in that a number of clergymen similarly situated to the complainant were charged the residence rates, and that the company had erred in changing applicant's rate to a business rate and should therefore restore the residence rate.

Short Term Users Not Entitled to Reduced Rates

THE California Railroad Commission, in re Brookdale Land Company, held on July 16, 1915, that since the water company must maintain its system so as to have a supply of water available at all times, and since the investment was just as large for short term users as though water were used by them continuously, no consideration could be given to the claim of such users that they were entitled to lower rates.

Competition

IN passing upon the application of the People's Telephone Company of Sterling for authority to issue stock, the Nebraska Railway Commission on June 3, 1915, states, among other things, that one of two results accompanies the operation of two competing telephone exchanges in the same community; either one or both is operated without profit with a resultant ultimate loss to stockholders and investors or an extra burden is imposed upon the subscriber who is required to pay for and maintain two telephones, and that, moreover, the inconvenience attached to such situation eventually becomes so burdensome and unbearable to the public that a consolidation is demanded.

The Commission held that despite the fact that public convenience and necessity do not require the construction of the proposed line, the Commission could not, under the law, refuse to authorize the proposed issue of securities, but a dissenting opinion was read by Commissioner Hall in which, after reviewing the statute at great length and citing many authorities, he vigorously dissented from the prevailing opinion and contended that under the general powers granted by the constitution of the State the Commission could deny the application on the ground that the proposed construction for which the proceeds of the stock issue were to be used was not demanded by public convenience and necessity and that should the second company attempt to operate, failure was imminent on account of destructive competition.

Commission May Alter Rates Fixed by Franchise

THE Arizona Corporation Commission in Tempe *vs.* Mountain States Telephone and Telegraph Company, decided on June 26, 1915, held that since a municipal corporation has only those powers expressly delegated to it and no power to regulate the rates of a telephone company within its borders had ever been delegated to the town of Tempe, an agreement between the town and the telephone company providing for free service to the town was beyond the power of the town to make, and that despite the provisions ot said agreement the Commission had power to prescribe reasonable rates and charges for service in the town and to regulate the granting of free service to the municipality.

Rate Schedules Must Be Kept on File at Pay Stations

THE Maine Public Utilities Commission, in a general order issued on May 20, 1915, directs that each telephone company in the State shall keep on file at each place it maintains where payment for telephone service may be made, so much of its schedule of rates as will clearly show the charges for service between such place and any other place which is shown by the schedules to be available by the service offered by such company, provided however, that the word "place" shall not be construed to mean so-called prepayment pay stations or other places where no servant of the company is customarily present.

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Utica District Outing

ABOUT 150 employees of the Utica District and friends journeyed to Hoffmeister's Grove, Whitesboro, N. Y., on Saturday, September 4, to attend their Third Annual Field Day and Clambake. The weather was ideal for the occasion.

A beefsteak breakfast was served at nine o'clock, and such a steak—broiled over cedar coals, giving it just the right flavor—would tempt the most fastidious. The clambake was served at four o'clock and Caterer Jones certainly outdid himself.

Preceding the bake, there was a program of field sports. The most interesting events were the tug-of-war, won by the Rome team, and the ball game between the married and single men. The married men had it in for their opponents because of the defeat of a year ago, and they certainly showed that they had been in training for the occasion. Results showed a 7 to 4 score in favor of the married men.

Utica District Employees and Guests at Their Annual Clambake, September 4, 1915

After the bake, Bob Blake, of the Utica Commercial office, entertained the crowd with solos, and City Judge O'Connor gave a recitation. The guests of honor included Mayor Smith, of Utica, City Judge James K. O'Connor and Corporation Counsel August Merrill.

The Committee to whom the credit of the success of the affair is due consisted of Geo. Somers, L. D. Speed, L. J. Lyons, W. J. Hartnett, W. R. Scholich, T. M. Chase, H. C. Porter.

Successful First Season for Telephone Club Baseball Team

THE Telephone Club baseball team ended its season with a victory over the Western Electric team in an exciting game that showed a final score of 4—3. The game was by far the best played of the season and is an excellent forecast of what the team will do next season.

This being the first baseball team to represent the Telephone Club, the players were strangers to one another and, as a result, it was late in the season before they acquired the team work so necessary for a thoroughly successful nine.

With a year's experience the Club should be represented next season by one of the fastest teams in the city, and with an attractive schedule the games should prove most interesting.

The features of the season were the effective pitching of Strack and the batting of Totten and McCollough.

Twelve games were played, resulting in 8 victories and 4 defeats as follows:

Telephone Club	13	Atlantic Tea Co	2
"	18	Western Union	2
"	12	Picked Team	6
"	14	Waterman	12
"	10	Bklyn Bd. R. E.	3
"	6	Castleton	14
"	6	Edison	15
"	2	Collier's	9
"	3	American Can	2
"	12	Brown Durrell	3
"	5	Borden	9
"	4	Western Electric	3

New York Telephone Club Baseball Team, 1915
Standing (left to right)—Weiss, C.F.; Flynn, 1B.; Deyo, P.; Sullivan, C. Middle Row (left to right)—Edwards, S.S.; Larie, R.F.; Strack, P.; Buckman, 3B.; Casey, 2B. Bottom Row (left to right)—Weber, L.F.; McCollough, P.; Harrison, Scorer; Hanrahan, Manager.

Syracuse Bowling League

THE employees of the N. Y. Telephone Company located in Syracuse have again organized a bowling league, and anticipate a most successful season. The league this year will consist of eight five-men teams. The season started October 8 and ends on March 10. Matches will take place Friday evening of each week, with the exception of Christmas and New Year's, each match consisting of three games. Each team will roll three matches with every other team.

In order to make the contest as close as possible, all departmental lines have been disregarded and eight very evenly matched teams have been selected. A very interesting and closely contested race for leadership is expected.

Team	Captain
Cayugas	Coney
Delawares	Doxtater
Iroquois	Greer
Mohawks	Hartnett
Oneidas	Howell
Onondagas	Neu
Senecas	Parker
Tuscaroras	Smith

Organization Changes

New Jersey Division

Plant Department

James N. Walters, formerly Engineer, appointed Chief Switchman New Jersey Division; Fred J. Scudder, formerly Engineer, appointed Chief Switchman New Jersey Division; Ernest L. Clark, formerly Special Inspector, appointed Engineer, New Jersey Division.

Central Division

Traffic Department

Mr. C. H. Hartzell, Assistant District Traffic Manager, North Brooklyn, appointed District Traffic Chief, Utica, vice Mr. J. F. Carroll, Jr. resigned to accept the position of Traffic Supervisor of the Scranton District, Bell Telephone Company of Pennsylvania.

Miss Clara Hosler appointed Chief Operator at Baldwinsville vice Miss Margery Hosler, resigned.

Miss Florence Galvin appointed Chief Operator at Seneca Falls vice Mrs. Katherine Weitzel, resigned.

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NEW YORK TELEPHONE COMPANY

GENERAL OFFICES, 15 DEY ST., NEW YORK

U. N. BETHELL, President
F. H. BETHELL, Vice-President
H. F. THURBER, Vice-President
FORD HUNTINGTON, Vice-President
WALTER BROWN, Secretary & Treasurer
J. L. SWAYZE, General Counsel
C. T. RUSSELL, General Solicitor
R. V. MARYE, General Attorney

J. A. STEWART, General manager
J. S. WILEY, General Auditor
E. F. SHERWOOD, Chief Engineer
H. C. CARPENTER, Engineer
T. P. SYLVAN, Asst. to Vice-President
E. A. GURNEE, Asst. Treasurer
WALDRON HOPPINS, Asst. Secretary
J. S. KENNEDY, Secretary, Employees Benefit Fund Committee.

COMMERCIAL DEPT.

J. S. McCULLOH
General Com'l Supt.

W. F. BAKER
Asst. to Gen'l Com'l Supt.

A. D. WELCH
General Com'l Engineer

R. S. SCARBURGH
Advertising Manager

J. LENIHAN
Collection Attorney

PLANT DEPT.

G. C. ALLEN
General Supt. Plant

A. W. ALLEN
Supt. Buildings & Supplies

J. C. RENNARD
Real Estate Manager

W. T. GURNEE
Plant Accountant

TRAFFIC DEPT.

J. H. GORDON, Jr.
General Supt. Traffic

R. H. BOGGS
Traffic Engineer

H. G. GREENE
Manager Public Telephones

A. D. SCOVEL
Mgr. Traf. Inspection, M-B

ACCOUNTING DEPT.

P. O. COFFIN
Auditor

J. A. KENNEDY
Auditor of Disbursements

A. J. NORMAN
Auditor of Receipts

C. H. GROVER
Supervisor of Methods

Manhattan-Bronx & Westchester

J. R. POLLOCK
Division Com'l Manager
15 Dey Street

Manhattan-Bronx & Westchester

BURCH FORAKER
Division Plant Supt.
24 Walker Street

Manhattan-Bronx

H. J. SCHULTZ
Division Supt. Traffic
15 Dey Street

Westchester

M. H. ORTH
Division Supt. Traffic
40 South Fifth Ave.
Mt. Vernon

Lower Manhattan

L. F. HALSTED
Division Auditor Receipts
221 E. 37th Street

Upper M.-B. & Westchester

E. A. GIRARD
Division Auditor Receipts
2033 Fifth Avenue
New York

Long Island

H. W. DRAKE
Division Com'l Manager
81 Willoughby Street
Brooklyn

Long Island

P. D. HONEYMAN
Division Plant Supt.
547 Clinton Avenue
Brooklyn

Long Island

G. L. YATES
Division Supt. Traffic
81 Willoughby Street
Brooklyn

Long Island

A. W. DEAS
Division Auditor Receipts
81 Willoughby Street
Brooklyn

New Jersey

H. G. KERR
Division Com'l Manager
281 Washington Street
Newark

New Jersey

I. J. THORP
Division Plant Supt.
281 Washington Street
Newark

New Jersey

G. H. MERRILL
Division Supt. Traffic
281 Washington Street
Newark

New Jersey

C. H. LEONARD
Division Auditor Receipts
281 Washington Street
Newark

Hudson

J. A. JAMISON, Jr.
Division Gen'l Manager
Telephone Building
Albany

Hudson

E. H. POWLEY
Division Plant Supt.
74 Chapel Street
Albany

Hudson

E. G. ANDERSON
Division Supt. Traffic
74 Chapel Street
Albany

Hudson

J. P. HILL
Division Auditor Receipts
Telephone Building
Albany

Central

D. C. COX
Division Gen'l Manager
321 Montgomery Street
Syracuse

Central

F. J. CHESTERMAN
Division Plant Supt.
321 Montgomery Street
Syracuse

Central

H. H. KENNEDY
Division Supt. Traffic
321 Montgomery Street
Syracuse

Central

L. A. WILCOX
Division Auditor Receipts
321 Montgomery Street
Syracuse

Western

C. A. SPAULDING
Division Com'l Manager
Telephone Building
Buffalo

Western

P. O. JACOBS
Division Plant Supt.
Telephone Building
Buffalo

Western

J. J. WELCH
Division Supt. Traffic
Telephone Building
Buffalo

Western

H. W. GAUL
Division Auditor Receipts
Telephone Building
Buffalo

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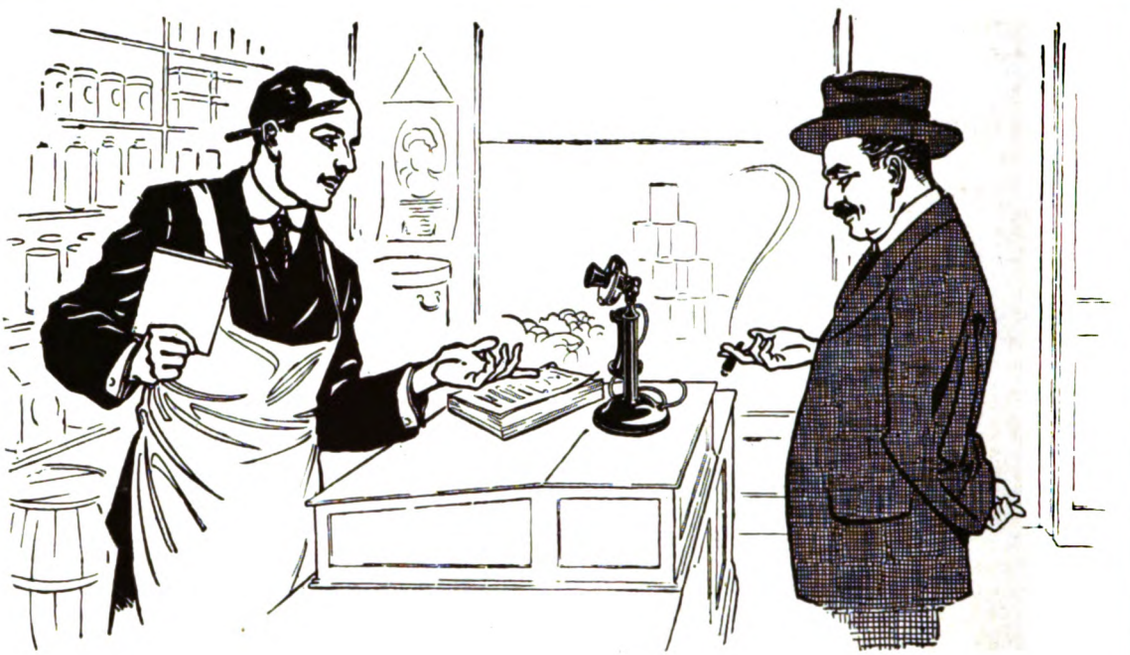

"There's my Best Salesman"

"MY telephone costs but a fraction of what I pay my errand boy and yet it brings me more business than my best clerk.

"Why, I'd rather board up my front door than try to get along without my telephone. It's the best salesman I have."

You will feel the same way about ***your telephone*** if you will use it systematically to win business.

Our nearest Commercial Office will be glad to give you helpful suggestions for starting a Selling-By-Telephone Campaign. Just telephone, call or write.

AMERICAN TELEPHONE & TELEGRAPH CO. — ONE LONG DISTANCE TELEPHONE — BELL SYSTEM AND ASSOCIATED COMPANIES

NEW YORK TELEPHONE COMPANY

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The Telephone Review

VOL. 6, NO. 12 DECEMBER, 1915

CHRISTMAS BELLS

POEM BY EDNA A. COLLAMORE — PAINTING BY ERNEST C. RIEDEL

Said good Father Christmas to Dame Electricity,
"Will you help me in spreading the Yule-tide felicity?"
The dame, with a smile, took her needles of light,
And knit with a speed that was swifter than sight.

East and west, north and south, here and yon went her thread,
And in every direction good wishes were spread.
Click, clickety-click, went her needles apace,
And love and affection were hurried through space.

Ting, ting, ting-a-ling, friend was fastened to friend,
That the ties time had weakened, new kindness might mend.
And, before Father Christmas, her work lay unfurled,
A garment of love, made to warm the whole world.

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German Telephone Troops Repairing Damaged Wires and Cables

Two German Telephone Engineers Repairing a Telephone Cable in the Trenches in Belgium, Damaged by Shell Fire of the Allies

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The TELEPHONE REVIEW

New York December 1915

VOLUME 6 NUMBER 12

The TELEPHONE REVIEW

J. D. NEWMAN, Editor

Published monthly by the New York Telephone Company. U. N. BETHELL, President; WALTER BROWN, Secretary and Treasurer. Publication Office and Principal Place of Business, 15 Dey Street, New York.

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VOL. VI. DECEMBER, 1915 No. 12

Christmas Bells

"AS a subscriber, I love to be called to the telephone on Christmas morning and hear the infectious laugh of a jolly uncle a hundred miles away, the good wishes of a young mother in quarantine with a little scarlet fever patient, the greetings of every-day friends, the impulsive thank-yous of warm-hearted folk, who cannot wait to express gratitude formally, but utter it spontaneously when the feeling is at its height.

"Nothing adds more to the gaiety of the Christmas reunion than the telephoned greetings of the far-away ones, served warm and fresh at the family dinner. Christmas would hardly be Christmas now without the telephone.

"Electricity naturally suggests a great world spirit, brooding, powerful, magnificent, like an Egyptian elemental. It is almost too great a force to be casually summoned to attend our small affairs. But Dame Electricity at Christmas, engaged in rapidly transmitting good will from man to man all over the earth, has a task worthy of her strength. How efficiently she works, passing friendship and kind wishes rapidly and without loss from one personality to another, and using none of the burdensome trappings and tinseled fol-de-rol that hamper and confuse the venerable and abused Santa Claus."

This letter of Miss Edna A. Collamore, around whose beautiful lines on our front cover Mr. Reidl has drawn his mystic and lovely picture, expresses so fully the Christmas spirit and the meaning of the telephone in the all-pervading warmth and joyousness of the season, that we make it our leading editorial.

The poetic conception of the telephone is particularly appropriate at Christmastide, and is sure to stir chords of tenderness, and perhaps bring together over the wire forgotten or neglected friends in happy reunion.

Miss Collamore's poem, as well as the letter in which she tells of the impulse that prompted her to write it, is a sweet and delicate tribute to the work the operators perform—knitting "a garment of love made to warm the whole world."

OUR outside back cover this month is a reproduction of a cartoon drawn by Mr. Rollin Kirby, of the New York *World*, and orginally used in that paper. Subsequently, Mr. Kirby sent the original to Mr. F. H. Bethell with h s compliments, and thus we have the opportunity of presenting the picture to our readers and adding to the attractiveness of our magazine.

Shop Early

"POSTMASTER-GENERAL Burleson," say the newspapers, "has just issued a warning to the public to do its Christmas mailing early, in order that his department may provide for the quick and effective dispatch and delivery of holiday matter." This is a timely and practical warning.

Early Christmas mailing means early Christmas shopping, and early Christmas shopping means "avoiding the rush," which in turn means personal comfort. This is the selfish view of the matter. It may be fun to mingle with the crowd in the stores the last few days before Christmas, but not if it is in a struggle to reach the counter and be waited upon, or to wend one's way through the seething mass of humanity with arms full of bundles. The way to enjoy it is with the shopping done.

Secondly, this regard for personal comfort possesses the virtue of consideration for the clerks in the stores, who become nervous and weary and all fagged out in the service of heedless throngs shopping at the last minute—doing wrong that good may come of it. They should have shopped earlier and got more good out of it. With this may be linked the consideration for the postmen, which can be shown by early Christmas mailing. It is easy to picture the weary postman trudging haltingly along from house to house, with mail bag overflowing and arms full of joy and happiness for others, and perhaps with a little cart full of it, too, which he is pulling behind him. Uncle Sam doesn't always make provision for the delivery of the extra mail, and if the postman doesn't do it, some of the mail isn't delivered on time. This may be what the Postmaster-General meant when he issued the warning to the public to do its Christmas mailing early.

And now thirdly and lastly: There was a maxim current in Rome before the dawn of the first Christmas: "*Bis dat qui cito dat*," which being interpreted is, "He gives twice who gives quickly." If the public does not do its Christmas mailing early, so that the "department may provide for the quick and effective dispatch and delivery of holiday matter," it is possible that one-half of the gifts, the half that comes from giving quickly, may be lost. A gift loses its flavor when delivered "the day after," and, moreover, it is too late to bring a return. How many gifts, alas, are given for that reason!

As employees of a Company which is engaged in the service of the public, day and night, in season, out of season, and at all seasons, let us heed the warning of the Postmaster-General, and also follow the Golden Rule.

The case of the store clerks and postmen, of course, is not parallel with ours, and between them, too, there is a distinction springing from the nature of their work. No amount of preparedness or forehandedness on the part of the stores can eliminate the trials of the Christmas rush, so long as Christmas is Christmas and the selection of every gift a thoughtful matter. The business of the stores is not simply a mechanical handling of commodities. It cannot be calculated that such and such articles

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will take so much time to be disposed of, for the human equation is a part of every purchase, and it may cause the time to vary from five minutes to an hour in the disposal of one article, according to the exigencies of the shopper's needs or personality. Since it is the variable taste, or whim, or requirements of the public that make the shop girl's lot a hard one at Christmas, the public is ready to do its best in making the time easier, by coming early to the shops.

The Postmaster-General in his warning has pointed the way to avoid the congestion of mail matter and the overworking of the employees in his department. Christmas mail can be held, and presents are often hid away until the morn, without affecting the sentimental interest which always attaches to opening them on Christmas Day.

This is not true, however, of telephone greetings, which must be given and received at the psychological moment. There is an interest gained by a present or letter being delivered on the particular day, but the personal greeting by telephone loses its savor of timeliness and thought if it is not made upon the day itself. The personal element predominates in the telephone greeting, and the telephone company pays the public the compliment, if it can be so expressed, of being prepared for the maximum use which is made of its wires, recognizing that it is a public servant and not an accessory.

Real Bell Spirit

MISS MARY MOFFETT, cashier of the local commercial office in Brockport, was aroused from her slumbers, past midnight on November 21, by an alarm of fire. Finding upon inquiry that the commercial office of the Company was threatened, Miss Moffett woke her two sisters and together they hastened to the office, a distance of a mile, and removed all records and stubs to the quarters of the Traffic department, about two blocks away and outside the zone of danger.

In his official report of the occurrence, Mr. James S. Wilkin, local manager at LeRoy, wrote: "In my estimation this was a great piece of work," and his report has reached the highest officials of the department and they have concurred in his opinion.

Miss Moffett, in displaying the true Bell spirit, gave an example of "the commercial girl always on the job." She and her sisters earned the highest appreciation for their admirable and fearless behavior, which was equally displayed by the traffic forces. Every girl in the central office reported for duty when the fire alarm sounded, and to all of them is due the fullest recognition of their loyalty to the Company and their sense of obligation to the public.

Such occurrences are the strongest possible evidence of that spirit of service which impels employees to make the Company's business their own business, with the same regard for its welfare as if their personal reputation and prosperity were at stake. They are demonstrating in these unusual ways as well as in the ordinary routine of the day's work that they consider their own interests and the Company's interests as identical—not only mutual and reciprocal, but *identical*. This is the spirit which exists throughout the organization, from messenger boy to president, executives to cashiers, operators to administrative heads of departments—everywhere. And the Company regards it in the same light, which makes us all a "happy family."

Kansas Corn

MR. VAIL says, "Everyone knows the fate of him who tells the first fish story."

All the stories of prolific crops told by Western farmers are topped by the latest from Kansas. It is said that cornstalks are so tall in some parts of Leavenworth County that they are interfering with telephone service. On Dan Monroe's place, south of Lansing, the stalks pressed against the telephone wires and caused short circuits. When the cause of the trouble was discovered, two rows of corn had to be cut on each side to keep the wires clear.

As he is something of an agriculturist himself, Mr. Vail might hesitate to class farmers with fishermen.

Don't Jiggle the Hook!

THE newspaper advertisements of the New York Telephone Company always attract attention because of the story they tell, whatever may be the subject. They have been used as the text for sermons, as the subject of newspaper editorials, and as illustrations of correct and concise English. Always they contain useful information and a suggestion which it would be profitable to follow. A recent advertisement of the company, "Don't Jiggle the Hook," inspired the editor of the Newark *Evening News* to write the following editorial:

Last week the telephone company ran an advertisement which started with the line: "Don't jiggle the hook." It was a direct little preachment on the evil of trying to recall "central" by rattling the receiver hook.

I was much impressed with this article because I know a great many people who "jiggle the hook" literally and figuratively. You know the sort I mean.

I am acquainted with a certain man—a good and estimable fellow—who I am sure "jiggles the hook" when he telephones. I never saw him telephoning, but I KNOW he "jiggles the hook."

This man has "temperament"—and TEMPER! He is nervous and excitable. He "jiggles the hook" in everything he does. And the odd part of it is, he does NOT ACCOMPLISH anything. By "jiggling the hook" constantly he burns up his reserve strength and his nerve force. Some day this poor fellow will go all to pieces.

The man who makes the most noise is not always the most efficient, nor does the man who "jiggles the hook" always get "central."

Take it calmly, I say; don't waste your precious energy.

We reproduce the editorial because the philosophy it contains might well be taken to heart by all our readers.

Next Door Neighbor to All

"MIGHT as well be out of the world as out of the Bell Telephone directory" is a version of a familiar proverb that might be applied to an incident recounted by Mr. C. J. Ernest, local manager of the Otsego and Delaware Telephone Company in Oneonta. An advertisement was placed in the Oneonta *Star* by a Bell subscriber who has had service for a long time on a Farmer's Mutual Telephone line, for the purpose of informing the public that he was no longer out of the world. The notice reads:

SPECIAL NOTICE

In order to be next-door neighbor to all, I have installed a real telephone (the Bell, of course), so if you have any visiting, call the other party, please, but if business, call me at any old hour, as all hours are business hours with me.

THE REAL ESTATE MAN.
L. Kirkegaard, Phone 10-F-13

Do It by Telephone

WE offer as a maxim for the guidance of our friends and the Company's patrons during the new year,

DO IT BY TELEPHONE.

Let every one tack it up where it may always be seen and at night repeat the lines:

Count that day lost
Whose low descending sun
Sees not at thy hand
Some worthy action done—
By Telephone.

Safety First

I SAW the following article posted in a large factory and thought it would help to keep the subject alive if it were published in our TELEPHONE REVIEW:

Safety should be your first thought. Accidents to yourself or another are usually somebody's fault. Don't let them be your fault. Finding the danger points about your job first is the safest way, then report them to your foreman. Every time you prevent an accident to yourself or to another, you become someone's benefactor. Time lost through accidents is a waste, if the accident could have been prevented. Your duty to yourself, to your home and society is to help prevent that waste by being careful.

W. O. SCHNITZER,
Night Wire Chief, Buffalo.

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Four Hundred Feet Below Daylight With the Telephone

Train of Coal Cars Leaving the Breaker

An Account of the Use of the Telephone in the Mining of Coal

By W. E. Johnson, Advertising Department

"HELLO, Brady, stuff's running below grade in Chamber 33. Work 44."

A man garbed in regulation miners' overalls and jumper swung around as he restored a telephone receiver to its hook. A pair of blue eyes twinkled at us from the centers of twin circles of coal dust. A pleasant, genial smile lit up a face whose color could never have been guessed if it were not for the many rivulets of sweat that left their courses outlined in white on the grimy background.

"So you want to know something about the way we use the telephone in mining coal, do you? Well, let me see—why, we use it for—for—well, for *talking*. Didn't want to know *that*, did you?"

We explained that we had entertained the idea that even mine telephones were used for talking purposes.

"What peculiar uses do you make of the telephone?" we ventured. "In what *unusual* way do you use it?"

"Oh, there's nothing unusual about the way *we* use the telephone in the mines. Someone down below wants to talk to someone up here and he just rings him up; that's all. Nothing unusual about *that*, is there?"

We were forced to admit that there wasn't. Yet we knew that somewhere back of that black exterior there was many a good tale that would interest the readers of THE TELEPHONE REVIEW, many a good story in which the telephone had played an important part, if we could only insert our verbal pry on the proper angle and work the story loose.

Just outside the little office in which we were seated towered one of the biggest breakers in the anthracite coal fields, steam pouring from a dozen funnels and striving with the rays of the morning sun to pierce the pall of coal dust that hung over the odd-shaped structure like some great black storm cloud. Somewhere nearby a dynamo was grinding out its high-pitched song and telling of the industry that was going on within reach of its great power wires. Past the little windows in the right of the office went an almost unending procession of cars loaded with the fruits of the labors of sweating miners far down below, and bound for the four quarters of the earth to satisfy the hungry maws of the world's furnaces.

There was a story here, but our problem was to get these miners to talk—a difficult matter when you are dealing with men who are doing real big jobs and who, in addition, have spent half

The Coal Dust Twins

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their lives in the silent places of the underground world whence comes our coal.

But, fortunately, we were not put to the necessity of working the problem out ourselves, for a Moore gong connected with the office telephone set up an insistent clamoring and the mine foreman jumped to answer it.

For just an instant did he hold the receiver to his ear. Then he rushed to another telephone across the room and turned a generator crank furiously, meanwhile stamping a heavily booted foot impatiently while waiting for the mysterious someone at the other end of the line to answer—then—

"The wagon—quick!"

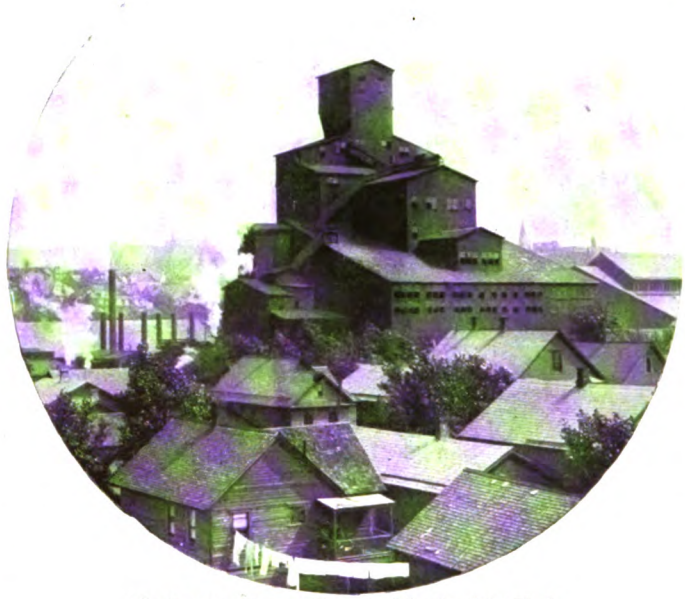
He slammed the receiver into its place, picked a grimy cap from the desk and was out of the door before we could inquire the nature of the errand that had transformed this quiet, unassuming mine foreman into a human dynamo of energy and action.

The Accident

Over at the shaft mouth under the giant breaker a group of silent, sober-faced men had gathered about the great hoisting drum, the driver of which was restoring a telephone receiver to its hook as we came up.

"It's one of the new men," he told the foreman. "Rock came down on him—pinned his leg—they're putting him in the cage down below now."

Somewhere close by, a gong sounded two long rings and a short one. The engineer reached over and sent an answering signal over a bell wire. Then he threw a lever, the great drum began to revolve and all eyes turned to the great dial located in front of the engineer, and on which a white arrow indicator was just leaving the 400-foot mark. Three hundred and fifty feet—the drum began to revolve more rapidly—300 feet—it was going full speed, with the engineer watching the dial anxiously, hand at arm's length on the lever and foot on the brake. Two hundred feet—knots of men began to detach themselves from the little group about the hoisting engineer and draw away from the attention-holding dial to walk over to where the black maw of the shaft beckoned. One hundred feet—the clanging of the mine ambulance gong as the "wagon" came up to the door of the hoisting engine house—then—a roar from the shaft mouth, the grind of the great drums as the brakes shot home and the cage lifted itself suddenly from the shaft, bearing something that lay still and ghastly in the flickering light from the pit lamps in the caps of the men who were bringing it to the surface.



The Breaker Towers Over the Mouth of the Shaft

"Just Kids"—Boys Who Work in the Breaker

Fire in a Breaker—Telephone Saved 400 Lives

The "doctor" from below stepped off the car and addressed the ambulance surgeon. "Right leg crushed—rock—fall."

That was all. These men who labor hard have no breath to spend on useless words. They lifted the inert figure and bore it to the ambulance, and the "doctor," who was no doctor at all, but captain of the mine's first-aid team and winner of many a prize in open first-aid competition, turned to his boss, the foreman.

"Went back to his work too soon after firing," he said, with a jerk of a thumb toward the ambulance. "Probably didn't use his lamp to look for any loose stuff along the side of the seam, and it got him. I've sent Murphy over to see that his wife and kids are looked after until he's out."

We walked outside into the bright sunlight again while the "doctor" wiped a grimy paw on his overalls, prior to shaking hands in response to the foreman's introduction. He was a young fellow, barely twenty-five, clad in jumper and overalls that were glazed almost to a mirror's likeness with a combination of coal oil and coal dust.

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"How do we use the telephone?" he said, when the purpose of our visit was explained. "Well, you saw a pretty good example of it just now. The Greek we brought up was working down in 'China'—that's the fourth and lowest vein. His chamber was 'way over west and about as far from the shaft-mouth as—well, about five city blocks. The Greek was a miner, and his laborer, or helper, was entering the chamber just behind him when part of the seam on the side gave way. The 'rock' pinned the poor fellow's leg to the floor of the chamber, and the laborer, seeing that he couldn't lift the weight, ran to the telephone station in that section, at the same time calling out for help to the men in adjoining chambers.

"The hospital, that's my headquarters, is in the third vein, and in about half a minute I had the message and was shooting down into the 'China' vein in the emergency cage with my 'first-aid' outfit. They had the rock off his leg by that time, and when I cut away his shoe and trouser leg and put a 'brake' on the blood-flow, we got him on a stretcher, and, well—you saw the ambulance on the job when we got him to the surface."

Yes, we did see, and while we did not underestimate the part that the telephone played in the little drama that was staged before our eyes, we couldn't help wondering at the marvelous system that these men of the underground world had laid out for themselves and into which they had woven the telephone and made it produce to its highest point of efficiency.

But the foreman had by this time produced from somewhere the newest thing in the style of miners' lamps—a carbide gas arrangement that is lighted by placing the palm of the hand across the cup-like reflector, thus confining the gas for a moment, and then casting a spark into it by twirling a flint disk as the palm is drawn away. A miner's lamp suspended by the band of a straw hat must indeed have seemed incongruous, and we waited in line with the next shift at the shaft mouth with no little sense of mortification. Where there was so much dirt it was almost a sacrilege to be clean.

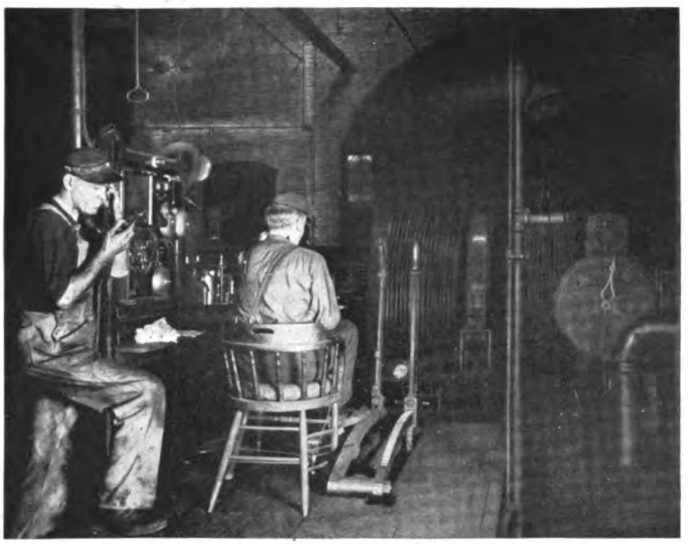
The Underground City

We stepped into the car and stood shoulder to shoulder with half a dozen men of about as many nationalities, and as the last man squeezed into his place the hoisting engineer slipped in his clutch and the cage began to descend.

No telephone building elevator was this, with ornamental iron-work sides and door, and equipped with every possible device for the safeguarding of ascending or descending telephonians.

There was just a board floor with two upright posts of stout oak across which was stretched an iron bar for holding purposes. The car didn't even possess an operator, didn't carry a man who could *see* where he was going and who could be depended upon to stop when the right time came. True, the hoisting engineer had his dial with the arrow indicator but—and we began to wonder just how infallible a dial and a white arrow—and last, but not least, an engineer—can be.

We began to descend in a series of jerks as the shoes on the shaft guide-rails



In the Breaker—The Hoisting Engineer. Telephone Connects with Men in the Mine

stuck first on one side and then on the other. Then the light of day was gone but for a bare square of sky far above that marked the shaft mouth, and we were in darkness except for the greasy yellow light that came from the smoky, coffeepot-like pit lamps in the caps of the men.

All sound but the grating of the cage against the guide-rails had ceased. The four walls of the shaft were slipping by with increasing speed, and when enough light was thrown on one place at one time it could be seen that the walls were wet and slimy. Occasionally the air that was being forced up the shaft by the descent of the car would flick the mud from the shaft walls into our faces, and snatching at the great tongues of smoky flame from the pit lamps, it twisted them into fantastic creations.

The car began to slow down—plainly the arrow was doing its work well—the air beneath the car, compressed by a descent of 400 feet, was roaring in its attempt to find an exit, the black and reeking walls seemed to go upward more slowly, there was a series of halting jolts and the car came to a stop.

Up above, the city was sweltering in the heat of the July sun. Men were going about mopping beady foreheads. Some had doffed their coats. Others wished that they dared. Here, we had come into another climate. It was as if we had entered a butcher's shop on a hot day and stepped into his refrigerator.

"Just like the subway," was our first thought as we looked down the long, low passage with its whitewashed roof and concrete flooring, but the subway never enjoyed such air as blessed this underground city. It was dry, too, and you were forced to pinch yourself and keep in mind the 400-foot descent in the rickety elevator to realize that you were considerably below Mother Earth's crust.

Away off into the darkness the main entry of the mine extended, and as far as the eye could reach were the twinkling lights of incandescent bulbs and the streaming flames from the pit lamps bobbing about like fireflies as the men went to and fro or bent to their tasks.

Out of the blackness dead ahead extended twin lines of glittering steel rails which went on under the coal hoist and into the other wall of darkness that lay beyond. As we stood waiting and blinking in the yellow light of the dust-covered electric bulbs, a red signal light far up the main entry began to wink. There was a rat-a-tat-tat on the rails at our feet and in a moment the low hung headlight of an electric motor appeared, a shower of greenish sparks dropping from the overhead wire, and the flame from the driver's pit lamp streaming out behind like the crimson streamers from the headband of some ancient charioteer on a Roman holiday.

The locomotive came to a stop with a hissing of air brakes almost at our feet and a dozen men jumped to the work of coupling up a long line of "empties."

"More work of the telephone," shouted the foreman above the deafening noise of banging car couplings. "We used to handle traffic on mine railroads by signal alone, but since we've spread out more and have so many places to cover with a limited amount of motor rolling stock, we can handle the motors with less confusion and in less time by using the telephone."

The little locomotive by this time had picked up its load—thirteen cars we counted—and was rattling them off into the darkness for refilling. We followed along the tracks in its wake, bending low in places to avoid the low-hanging roof beams.

A hundred yards from our starting point we curved sharply to the left and entered what appeared to be the door-

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way of some underground cavern. We were in a mining chamber. Above was the smooth low-hanging black roof, supported by two rows of stout props, and on either side and ahead loomed the face of the coal seam, the jagged sides of which caught the light from our pit lamps and broke it up into dazzling little spear points of fire tinted with every color of the rainbow. On the floor of the chamber was a pile of coal in rough lumps that, stored away in a commuter's coal-bin, would have brought joy to his heart for the rest of his existence.

One of the "empties" from the train we had seen at the shaft bottom was rolled up to the entrance of the chamber, its wheels "spragged" or braked by means of a heavy two-pointed stick, and the "loaders" began the work of filling, driving us from the chamber with the choking clouds of coal dust that their shovels sent into the air.

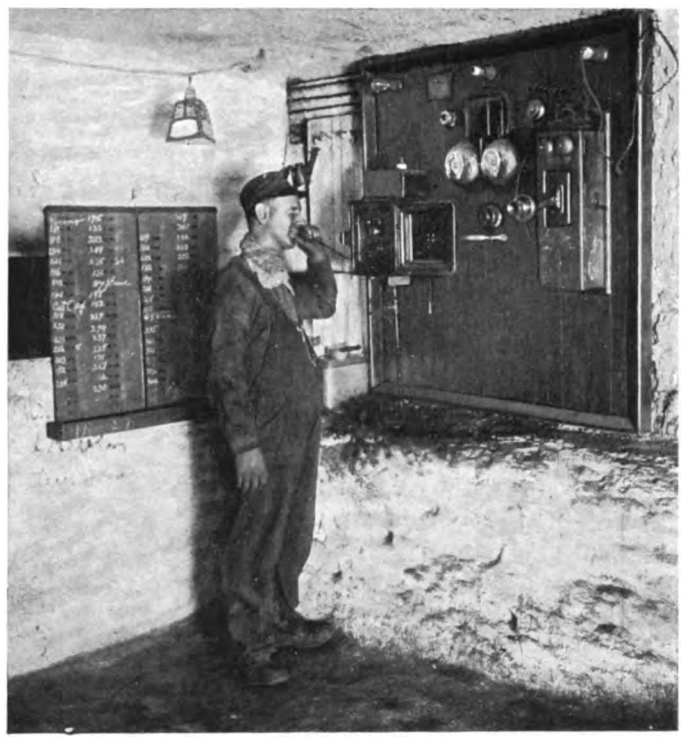
An Old-timer Tells a Story

Once more we took to the road between the rails, and now that we were far away from the light of the electric bulbs, we began to appreciate the flickering flame from the lamps in our caps. We walked perhaps two hundred yards down the tracks and entered the combination "Hospital and Fire Boss's shanty."

The "shanty" was a room about twelve feet square, apparently hewn out of solid rock, but the one thing about it that attracted and held our eyes was the equipment. Telephones, signaling apparatus, blue prints of the mines, a board diagram that showed the scenes of the day's operations, and a host of other things that we couldn't name, littered the table and adorned the walls. Here was the very heart of the underground city. It was all in one, the Mayor's office, Fire Headquarters, Police Headquarters and the Hospital.

Here the "Inside" foreman sits during his underground "spell" and with a telephone at his elbow he keeps his finger on the progress of the work in even the deepest recesses of the mystic maze of mining chambers. Here the "doctor" sits with first-aid packet ready to start for any point in the workings as soon as the telephone brings the word that his help is required in the interests of humanity. Here the "Fire Boss" sits in judgment during the early hours of the day and decides whether or not there's too much "fire damp" in the workings to allow the men to go into the chambers.

The telephone bell, another Moore gong, rang. This time a magnet coil had burned out at a point that we would have called "across the city" if we were up above. There was no new coil to be had "inside." That fact was ascertained by means of a telephone call to the electrician who was also in an office in some mysterious place out in the darkness, underground.



In the Fire Boss's Shanty

The foreman's assistant who had answered the call telephoned "outside" and turned to us as he hung up. He was a tall, lightly built man with gray in his hair and in his beard that even the coal dust could not hide. He walked with a peculiar sliding gait with head thrown forward and the point of his chin resting on his chest as though he were in constant fear of coming in contact with the low-hanging timbers in the roof.

"I've been workin' in the mines close on to forty-seven years," he informed us, "an' let me tell you that a mine's a much healthier and pleasanter place to-day than it was then. Then we had no electric lights, no electric drills, no electric hoists, and no telephones. A man had to see by the light of his pit lamp and he had to do all his drillin' by hand. When it came to going up the shaft we had to get into a tub that was simply hung at the end of a rope an' sometimes while we were going up there was a second tub comin' down and when we got to swingin' and bumpin' each other in the middle of the shaft it was a case of just holdin' on and trustin' to luck. But when it come to sending a message—say, that was a joke. Do you know what we did? We got an old slate and nailed it in the tub-hoist. When we wanted to send a message up—didn't make no difference whether it was a case of life or death or just a matter of gettin' some new supplies—we just wrote the message out on the slate and trusted to Kingdom Come that someone would see it. Yes, sir, minin's improved a whole lot since the telephone came."

"Forty-seven years—that's a long time to spend in the mines," we remarked. "Ever in any of the disasters?"

He accepted a Blue Bell cigarette before he answered and twirled it in his blackened fingers while he examined the Seal with a critical eye.

"Yes, I've been in many, but there's one—say, you'll be wantin' to know something about that—I remember well, if it wasn't for the telephone—"

He inhaled deeply of the cigarette and blew a cloud of smoke our way before he continued.

"It was back in 1911 in one of the Pennsylvania mines. No one ever knew just how it happened, but fire broke out in the breaker, that was built just like it is in this mine—up above the main shaft. But where we've got a ventilatin' system here that sucks the used air *out* o' the mines, in those days the fans sucked the fresh air *in*, by way o' the main shaft. Well, sir, the draft from the big ventilatin' fans just sucked at the flames and smoke from the burnin' breaker and pulled them into the shaft, an' there they were, strugglin' with all the heat that was in them to go up while the air current was tryin' to pull them down. But there's a mighty strong current from those fans and gradually it began to take hold of the smoke and draw it down to circulate throughout the workin's.

"I was down below. I was a 'shooter' in those days; that is, I was one of a gang of blasters, and I was in the act of making a cartridge when I thought I smelled wood smoke. Outside the chamber where I was workin' a few of the foreigners had gathered. They had smelled it, too, and they were getting uneasy.

"I got up and started for the next parallel entry. I walked slowly while the foreigners could see me, for there are some things that are much worse than fire, and one of them's a panic. But just as soon as I was out of sight I ran for all I was worth. This entry was what we call a 'return' for the air current, and the air that would be comin' that way would be the used air and

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would have passed through every other section of the mine. If there was fire any place it could be detected there.

"I stood in the 'return' for close to half a minute sniffin' the air without noticin' anything; then all of a sudden I gets the smell of wood smoke, and what's more the air that carried it was *warm*, whereas usually the 'return' is a place where an overcoat feels mighty good. There was fire and no mistakin' it.

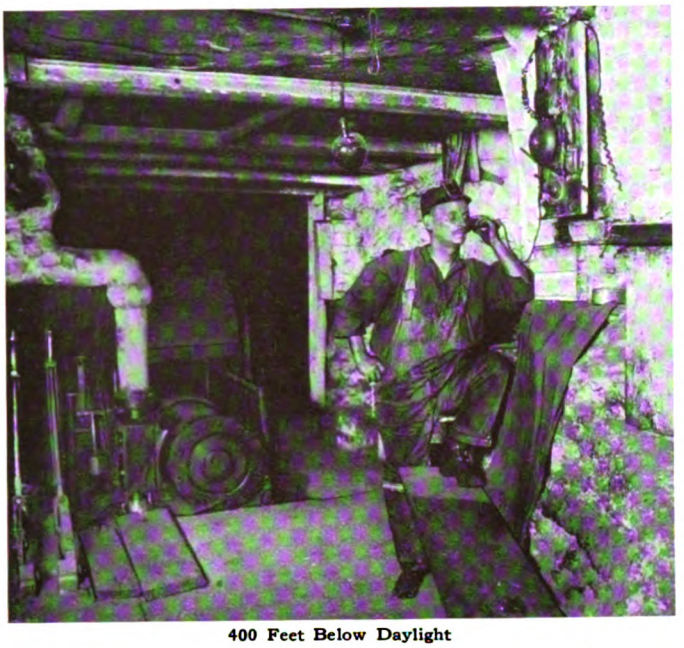
"When I got back to the foreigners they were jabberin' in their own tongues like a lot of children. Men were runnin' 'round not knowin' what to do because they didn't know where the fire was. It was dangerous to stay but more dangerous to run. The smoke was gettin' thicker all the time and the air was gettin' so hot I began to sweat. Over in the barn we could hear the mules squealin', 180 of them, poor beasts, so we went over and let them out and stampeded 'em up in the far end of the mine. They had worked hard enough during their lives to get a fighting chance for themselves when the time came to die. Then all of a sudden we saw the red light of the fire far down the entry. It was the shaft timbers and the hoisting cage burnin' from the sparks and flaming woodwork that had dropped down from above.

"A man who's worked all his life in the mines gets kind o' used to the idea of dyin', but the idea of goin' out in this way sort o' goes against him. The idea gets on your mind in an accident of this kind that there's no one up above who cares whether you get out or not; there's a sort of a hopeless feelin' comes over you, and after a while you just sit down and do nothin' but wait for what's comin' to you.

"Well, sir, things were gettin' pretty hot down there by that time, an' we was just sittin' around and waitin' to be baked alive when all of a sudden a bell rings up the entry a space. Say, do you know what that bell meant to us poor devils caged up as we were like a lot o' rats? It meant that there *was* someone up above a-thinkin' of us and that they were workin' their brains in our interests and tryin' their best to help, and when you get right down to it, 'going out' with someone thinkin' about you ain't so bad at all. It boosted up our spirits and there was a cheer went up from about four hundred throats that could have been heard up above only the air current was runnin' the other way. The bell that meant so much to us all was a telephone bell, and I up and went for it on the run.

" 'Open up all air doors in the main entry south of the "split," ' someone says to me as I picks up the receiver. 'Close north door of the "split" and order all men north.'

"Wondering why I hadn't thought of it before, I slammed up that telephone and ran back shoutin' to open up the air doors along the main entry. Almost immediately the air began to clear of smoke, for the air current was 'short circuitin',' you understand. The air that was comin' into the mines carryin' the smoke was just travelin' up to the open air doors an' goin' through into the return and up out of the mine, sort of followin' the line of least resistance, and as long as we kept up to the north and where the air current wasn't travelin' we were all right. Of course, we had some smoke up there, and by the time the fire was out the flames had come pretty near eatin' up all our oxygen, but it wasn't nothin' we couldn't stand. Sixty-nine lives went out with that fire, and about as many widows and more children hung about the shaft mouth for days afterward waitin' for those who could never come up except under a piece o' bagging. But four hundred came up to breathe the fresh air and see the blue sky and the sunshine, and to be welcomed by those who were waitin', just because the telephone ran a race with the flames and won out."



400 Feet Below Daylight

Mine Electrician and His Dog, Which Is a Famous Rat Catcher

The Mine's Star "Trouble Man"

We left the hospital and headed northwest, so we were told, for the electrician's headquarters. We had lost all sense of direction by this time. Every corner or pillar or runway looked to our unaccustomed eyes just like every other one, and, like the features of some other race of people, they expressed no individual characteristic that would enable us to file each one in the proper pigeonhole of our minds.

We entered the low doorway of a "shanty" and in a moment we were shaking the great greasy paw of the electrician.

"You want to know something about our telephone system, eh? Well, I ought to be able to tell you something about that. Keeps me busy enough. How? Oh, hunting trouble. Oh, yes, we've got trouble down here all the time, but, say, I'm not doing the hunting all alone. Come along and I'll introduce you to my assistant. For the kind of trouble we've got down here he's got an army of telephone men tied to a post."

Before we could take exception to this rather strong statement, he was off down the track with our little party bringing up the rear. A hundred yards down he whistled shrilly, and almost at once a great bull terrier was welcoming him with many leaps and yelps.

"Here's my trouble-hunter, and for the work he can't be beat. Let's go along to the barns and we'll see if we can't show you a sample of his work."

At the barns where the mules are stabled, the roof is supported by great concrete pillars which, for some reason or other, are pierced in several places by long rows of three-inch holes. The dog took up a station on one side of a pillar while the engineer went to the other and commenced poking a broomhandle into hole after hole.

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"Watch out," he suddenly called, "there's one of them in here. Get ready, Whitey. There you are!"

We didn't get much of an opportunity to see what it was all about for the moment, for a streak of white flashed through the air, there was a vicious shake of the dog's head, an ominous crunching of bones, and a rat that must have measured a good nine inches lay stretched on the floor while "Whitey," his nose thrust into another hole, was looking for more.

"There's the cause of my trouble," the engineer explained, pointing to the exhibit of the dog's handiwork. "You see, in some parts of the mine there's so much dampness that we're forced to use a heavily paraffined wire. The rats like the insulation and they're ready to make a meal of it at almost any time. Of course, when 'trouble' occurs, we don't leave the mine unprotected while we're looking for the break. We use the railroad tracks as an emergency circuit. Transmission's not so good, but in a mine it's a case of 'Any telephone in a storm.'"

We left the barns and the much troubled (we almost said rattled) engineer behind and picked our way into a lower level of the mine where the water was high.

"There are so many reasons for using the telephone down here," the foreman explained, "that it's hard to grasp them all at one time. Water, for instance, is something that must be watched closely. There's not so much water underground in the mine country as you'd think. Still, if the pumps should break down, even for a short time, the water would cause a lot of trouble. That's why we've got a telephone in the pump room."

"Ringing" with a Train of Cars

We were approaching an elevated structure on which was arranged another giant drum with its fine black strands of hauling cable. We were introduced to the engineer in charge.

"Telephone?" he said in response to our queries. "Sure—use it all the time. There it is on the wall." It was difficult to detect it among the mass of signaling apparatus but we did locate it finally. It was just a telephone receiver swinging at the end of a much frayed cord, and, apparently, it performed the combined duties of receiver and transmitter. We looked about in vain for a switch, push button or anything else that might be used for ringing purposes.

"How do you signal the fellow at the other end of the line?" we asked.

The engineer smiled. "I don't think there's another signaling device that is quite like the one we use here. This place is the highest point on an 1,100-foot slope. We use the hoisting engine to draw empty cars up the incline where they are loaded and returned to the foot of the slope by gravity. The man at the other end of the slope is liable to be at almost any point along its 1,100-foot length, and, of course, it's impossible for him to use a stationary telephone. He carries a special instrument about in his belt and connects up with the bell circuit and rings me whenever he wants to. But when I want to ring him—say, suppose we call him up now?"

The engineer pulled a lever, the great steel drum of the hoisting engine moved just about a foot on its axis; the brake was applied sharply and the drum came to a stop. The air current from the ventilator brought to us the faint banging of a train of cars at the other end of the hoisting cable far down below. Twice again the drum was allowed to revolve a foot or so and twice again there was the faint banging of car couplings at the foot of the slope. There was a slight pause while the engineer smiled at the expression of perplexity that must have been plainly written on our faces. Then came a responsive signal on a bell close by. The engineer picked up his receiver and spoke.

"Ringing" with a train of cars! Selective ringing indeed when you consider that you can reach a man at any point along an 1,100-foot line!

. . . . . .

We retraced our steps through the winding reaches of the mine, to where the day-shift had lined up with empty dinner-pails clanking, waiting for the cage to come down and carry them up to daylight and home.

The foreman drew us to one side out of reach of the loaded mine cars that were rattling by on their way to the coal hoist. The time had come for his summing up, apparently, and he proceeded.

"Telephones are great helps to us fellows down below," he said slowly. "Aside from the extra tonnage they add to the day's output there's a heap sight of real comfort in the thought that when you have a telephone you're not entirely cut off from everybody. There's the women folks now; they never stop worryin' about us fellows who dig our bread out of the mines, and so it's a big comfort to them if we call 'em up whenever we get a chance, and it's comfortin' to us, too, to know that when somethin' *does* happen and our time *does* come, there's always a chance of sayin' a last 'good-by' before the telephone circuit goes out."

We went up the shaft once more, took one last look at the doorway to the underground city that helps to keep us warm in winter and busy in all seasons, and we left behind the foreman and the wonderful organization that he controls.

At the Other End

THIS article pertains to telephoning, and may apply to anybody, from the office boy and young lady at the telephone to the boss himself. It is inspired by experiences on our return to the city in connection with some renovating of our town house.

Wanting some carpets cleaned we called up our old carpet cleaner and asked the party at the other end of the wire if he would have him call and see us in connection with the work of taking up, cleaning and relaying. "We are promising no work under ten days," came back the reply—starting in right off to give us a chill. How much better had the appointment been made without giving us such information, leaving any bad news to be told us personally by the proprietor himself.

The next call was for a decorator, who had some time since opened up in our vicinity and, we had been told, was desirous of establishing himself in the neighborhood. A young lady answered the telephone. We wanted to know if the proprietor would call and see us about some work. Not the slightest satisfaction could we get. He was out—she did not know—she could not tell when he would be in. She couldn't tell anything. Inasmuch as there are plenty of other decorators with whom we were acquainted, it is safe to assume that there is one resident of the neighborhood whose trade this newcomer will not get—all because of conditions "at the other end."

Our next call was to a large carpet house. Would they please send over to take measurements for certain new carpets required? Without any consulting of anyone else, and without the slightest hesitation, we were informed that they would have someone over on the following day.

Now we believe this is a sample of what occurs "at the other end" in the general business of telephoning. Business men attach altogether too little importance to the attention given their telephone, and we haven't the slightest doubt that much trade is lost, and, in some instances, positive enmity incurred, through carelessness at the other end of the telephone.

Just consider your own experiences. Don't you know plenty of people that you almost dread calling up just because of these faults at the other end? Don't you know lots of people that you dislike to talk to because you know they will be rude? On the other hand, don't you know lots of concerns that it is a pleasure to call up? You get the most courteous answers, the most prompt attention, and when finally you get the head of the concern, to whom you want to talk, it is a pleasure to continue the conversation.

Many firms regard the telephone in their office as something that any incompetent can attend to. They overlook the fact that the man who is calling them may be one of their best customers—may be somebody that they can make a best customer, and, also, that he may be a very busy man. If they were attending to him personally, if he should call at their office, they would feel free themselves to be courteous and nice and accommodating, but "at the other end," so far as the telephone is concerned, they seem to think that any kind of treatment will go. But it won't. They could well take a lesson from the telephone company itself, whose operators are so universally courteous and pleasant as to make calling a number in most instances a pleasure so far as they are concerned. We think there is nothing more important in the business affairs of any man than the careful supervision of what might be called "the other end"—that is, their end. Improvement in this respect in many offices we have no doubt, would mean a very considerable improvement in their business. —*The N. Y. Lumber Trade Journal.*

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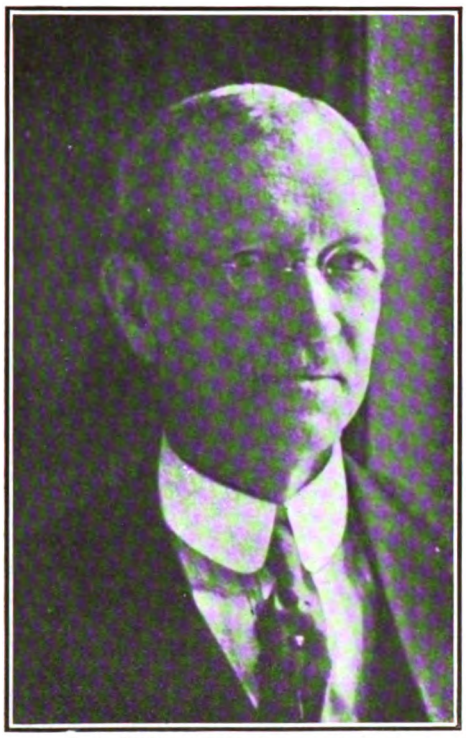
Recollections of a Telephone Pioneer

By WALTER W. NICHOLSON

(Extracts from a Paper Read Before the Central Section, The Telephone Society of New York)

MY earliest recollection of the telephone industry is in connection with a private line established by my father, Mr. C. A. Nicholson, in the City of Rome, N. Y., some time in the year 1877, while I was quite a young boy. Among the things of his building I remember distinctly a private telegraph line running to the home of one of our neighbors about a block away. This telegraph line was used for family and social intercourse and, naturally, created quite a stir in the neighborhood because of its novelty. Stations were added from time to time, until finally a station was connected at the lumber yard office where he was employed. His knowledge of telegraphy was acquired while in the army serving his country, during the Civil War, and in connection with one of the army telegraph stations.



C. A. NICHOLSON, Barneveld, N. Y.
Entered the Telephone Service, November, 1877

Professor Bell exhibited his telephone at the International Exposition at Philadelphia in 1876 and it was fully illustrated and described in the *Scientific American* at that time. Father was a regular reader of this paper and when he saw this article, he at once began the construction of two telephones, using the published plans for a guide, and when they were completed placed them, one at the office and the other in our home, in connection with his telegraph line.

After a good deal of experimenting, they were made to work successfully. They were connected in a side circuit controlled by a small lever switch so that normally they were out of circuit. The operation consisted of calling on the "key" and "sounder" of the telegraph set and then throwing the switch which put the telephones into circuit, and carrying on the conversation, thereafter, through the telephones.

No one had any idea as to the business possibilities for the future. One man—he was the practical joker of the neighborhood—describing how it could be made useful to people, said: "Why! you can run this wire into Jim Dyett's grocery and have the other end in your dining-room; then when your coffee ain't sweet enough call Jim and tell him to put his end in the sugar barrel and you put yours in your coffee—and there you are."

One day a man appeared and said he had heard that someone had a telephone there and he wanted to try it. Supposing, of course, that this man was only another one of the many curious people he had become used to entertaining, father promptly called the house and gave another demonstration which seemed to please his visitor very much.

Then, to father's very great astonishment, the guest announced that he was an agent of the National Bell Telephone Company of Boston, and was out prosecuting infringers, and would have to take up this case at once. For two or three days a cloud hung over the family that no one could dispel. Boy though I was, I realized, from such fragments of conversation as I overheard, that father was likely to get into serious trouble because he had made the telephones. It was some years before I really understood how this could be so.

WALTER W. NICHOLSON, Syracuse, N. Y.
Entered the Telephone Service, January, 1881

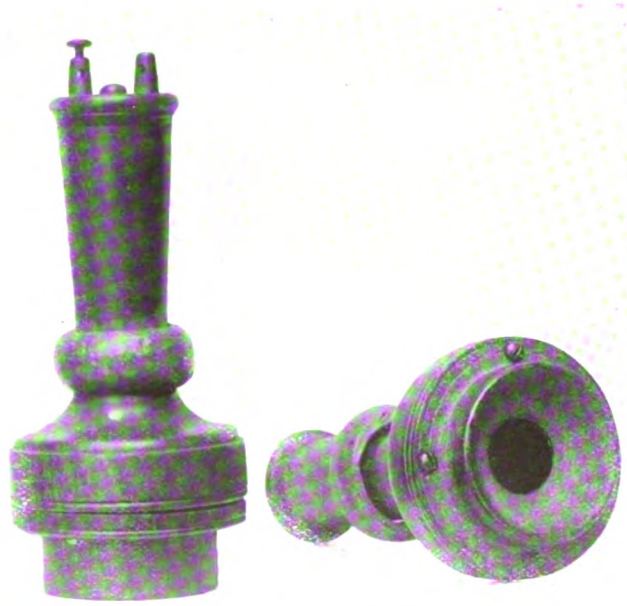


Fig. 1—Telephone Instruments made by Mr. C. A. Nicholson in 1877

However, as troubles usually do, this all cleared away and when the Bell agent (his name was Wilson, I think) left Rome father was the first licensed agent of the Bell Company for Rome and vicinity—and in place of his crude home-made telephones possessed two "sure enough" Bell telephones, and,

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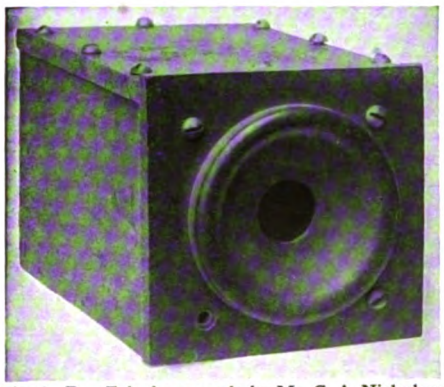

Fig. 2—Box Telephone made by Mr. C. A. Nicholson

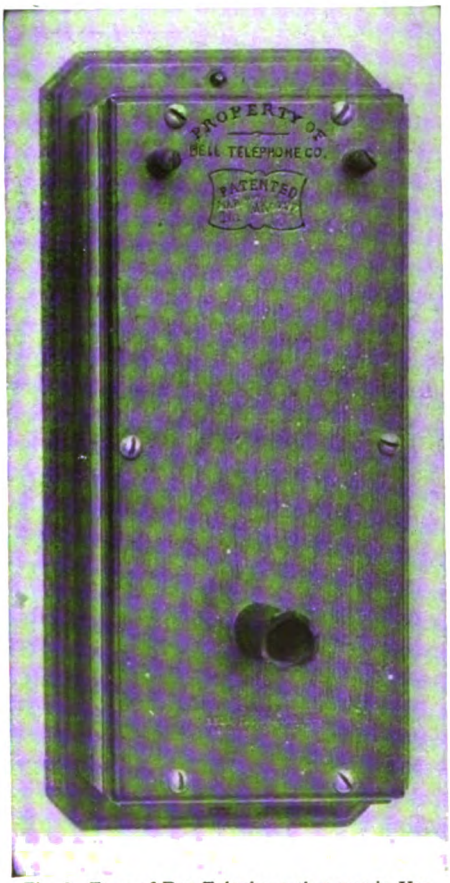

Fig. 3—Type of Box Telephone that was in Use

best of all, he left our instruments with father instead of sending them to destruction as was usually done.

Two private telephone lines were installed soon after, one between the wholesale grocery of Ethridge, Tuller & Co. and their oil station near the N. Y. C. railroad in the southwestern part of the city, and the other connecting the office of the Board of Water Commissioners with the city reservoir at Ridge Mills, about three miles away.

Soon after the installation of the Ethridge line this firm was able to dispense with the service of one employee who had spent most of his time in carrying messages between the oil station and the store.

In 1879, the co-partnership of C. A. Nicholson & Co. was formed, Mr. E. M. McChesney, an associate of father's in the lumber office, being the partner. They built and put into use the first telephone exchange in Rome. Charles Williams, Jr., apparatus was used exclusively, and grounded lines on poles and housetops—mostly the latter—formed the outside plant. This exchange grew so rapidly that father found it necessary to give up his position in the lumber yard and devote his entire time to telephone work. Many wise people shook their heads and said that it was another case of a foolish man giving up a good job and wasting his time on a "new-fangled" invention that was more of a toy than anything else.

Some time in 1880, Mr. Henry L. Storke, of Auburn, and New York, worked up through the State, promoting the consolidation of several small exchanges that had been established about as the Rome plant had been, forming them into well defined groups. He finally reached Rome and after some investigation organized the Mohawk Valley Telephone & Telegraph Company, in 1881, the Rome plant becoming a part of this organization. Father was made general manager of the new company and soon after began the building of exchanges in Oneida, Canastota, Norwich, Oneonta, and other towns, and toll lines to several small nearby places. It was about this time that I began my active telephone work by becoming night operator in the Rome exchange. The exact date was January 9, 1881.

In December, 1882, the Central New York Telephone & Telegraph Company

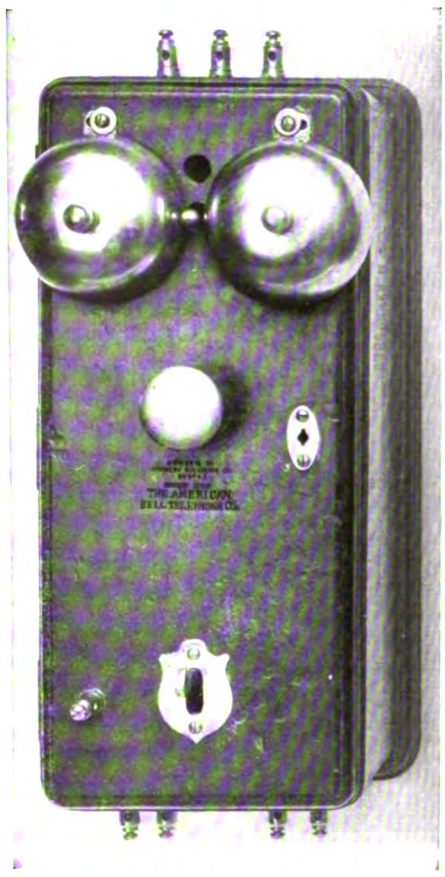

Fig. 5—Charles Williams, Jr., Set

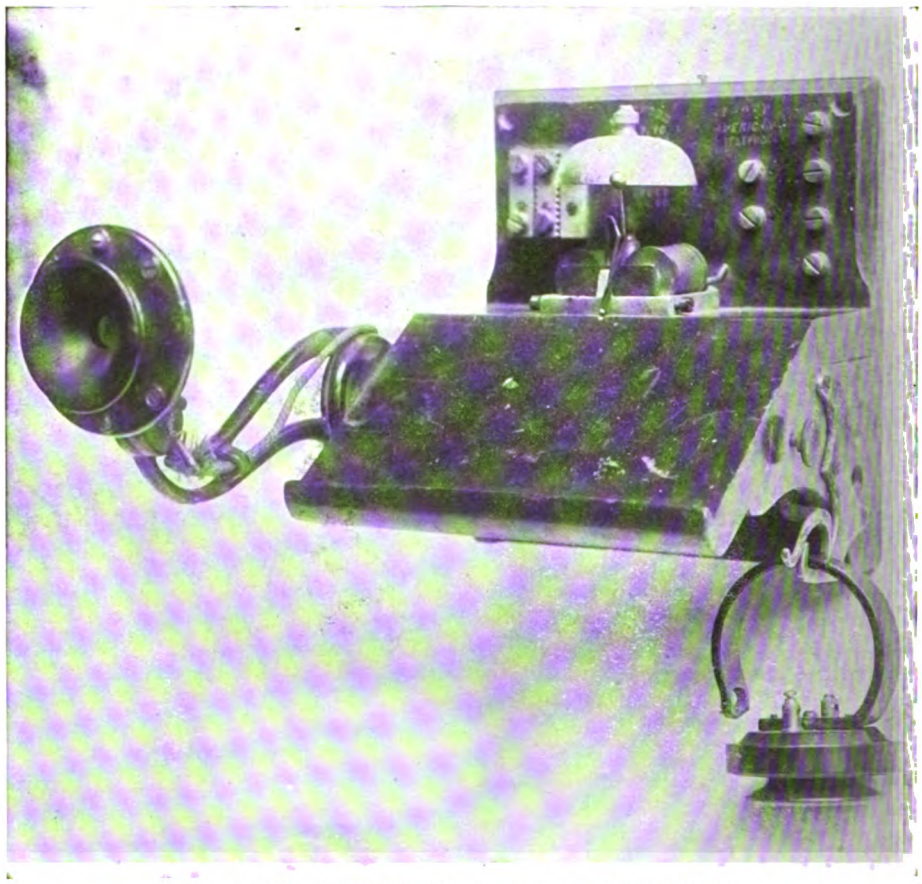

Fig. 4—Edison Pony Crown Set, put out by the Western Union

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made up of the Mohawk Valley and other companies was formed by Mr. Storke and my father, acting in conjunction with Mr. F. G. Wood and his associates at Utica.

Within a few days I have received a letter from Mr. F. G. Wood referring to the early toll plant and business of the company in which he says:

> When we finished our first toll line construction we had the best developed country toll line system in the United States—thanks to the energy and foresight of your father. Gross toll line earnings increased from $11,000 in 1883 to $45,000 in 1887 to $62,000 in 1889.
>
> We built these lines largely by the sale o. tickets. I think we issued in all about $60,000 worth and before they were retired they became a great nuisance to the treasurer, as most of the toll earnings came back in tickets which we called "chicken feed."

The original Bell license for Syracuse and the county of Onondaga was of the type then known as a short term license, covering a period of about five years, I believe. It was issued to Messrs. H. C. Brower & Son, East Genesee street, the son, Mr. F. C. Brower, being the surviving partner and still in business at the same location.

The Rome exchange was distinctive in one respect at least. It was the only exchange hereabouts which employed girl operators from the beginning.

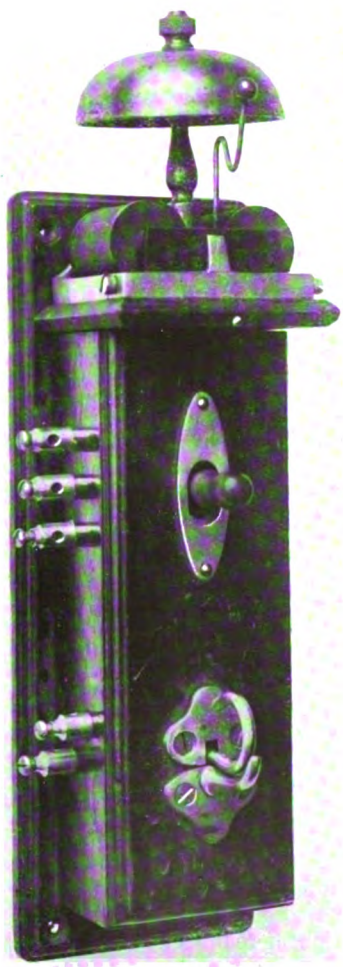

Fig. 6—One of the Famous Law Sets

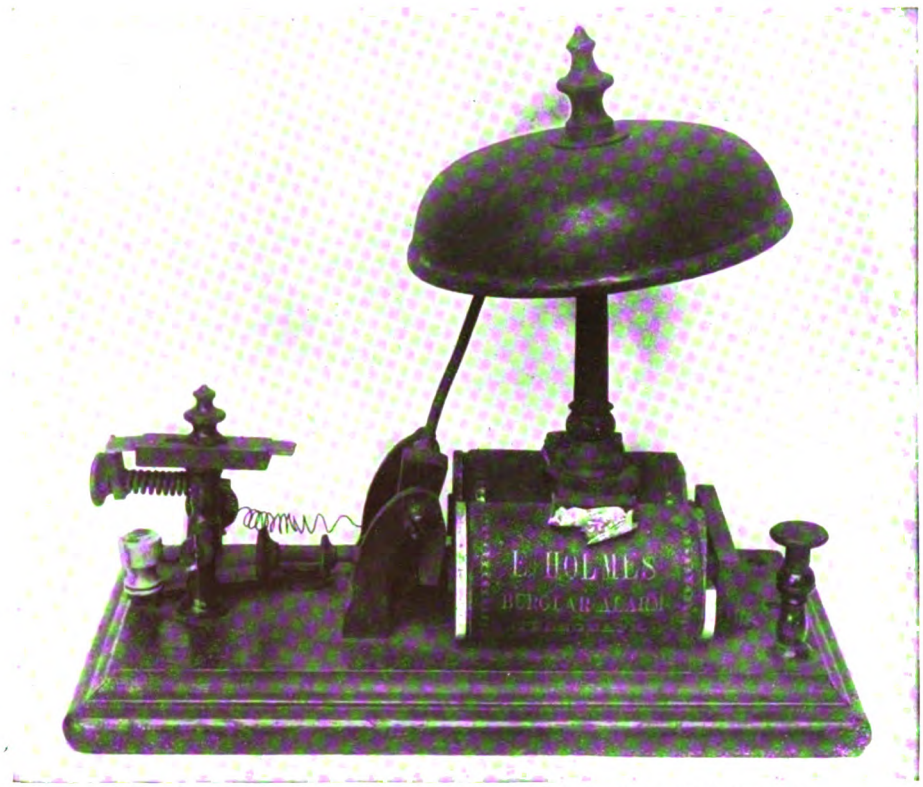

Fig. 8—Night Bell which aroused Mr. W. W. Nicholson when a Night Operator

A large part of the routine work at night consisted of reporting trains to the hotels. Then we had a good deal of work in following physicians as they progressed on their calling routes. They would call the night operator from one station and tell him where they were going next. Then if anyone called for that physician during the interval we would tell him when he next called. We made pretty good office boys for them. Then we had the early risers who asked to have the bell rung at a certain early hour, and sometimes we remembered to do it and got credit for being pretty good alarm clocks. But the real time of excitement was when fire broke out downtown. Then the town awoke and demanded instant telephone attention. Those were times when you got called down pretty hard, for do the best you could some callers waited (very impatiently) some minutes before they were reached.

I came near getting into trouble one night when a man rapped on the door about 10.30 P.M. and asked to be admitted. I said my orders were not to admit anyone after ten o'clock. He said that made no difference, he must be admitted. I allowed he would not get in unless he broke down the door. He shook the door violently and pounded pretty hard and then started off. I unlocked the door after he got down the hall a way and he, hearing me, turned around and hurled this parting word:

"Young man, I am Charles R. Truax, Special Agent of the American Bell Telephone Company, of Boston, and you will hear further from this."

I felt the next day would have something very serious in store for me (for in those days we were taught to regard anything coming from Boston as matter of the most sacred sort). However, by the time I saw him next day he had cooled off and actually commended me to father for not letting in a man who did not make clear who he was or the nature of his business.

Some time in 1894 I worked out a novel application of the so-called "Jacobs Circuit" (the foundation on which your modern "phantom" circuits are built) as a cure for serious electric light induction. We had a copper metallic circuit between Syracuse and Utica by way of Oneida. We also had a single grounded copper wire for service between Syracuse and Oneida. The grounded circuit brought in a heavy induction noise after the electric lights were turned on, and as our transposition system was rather crude the metallic circuit picked up a lot of this disturbance. Using the two sides of the metallic circuit, jointly, as one side of a second circuit and the single copper wire as the other side, we improved the transmission very materially and used this arrangement until a second wire was placed between Syracuse and Oneida. The resistance coils for this system were made up from five hundred ohm german silver compensating coils taken from the old Hibbard Distributing frame in the Syracuse exchange.

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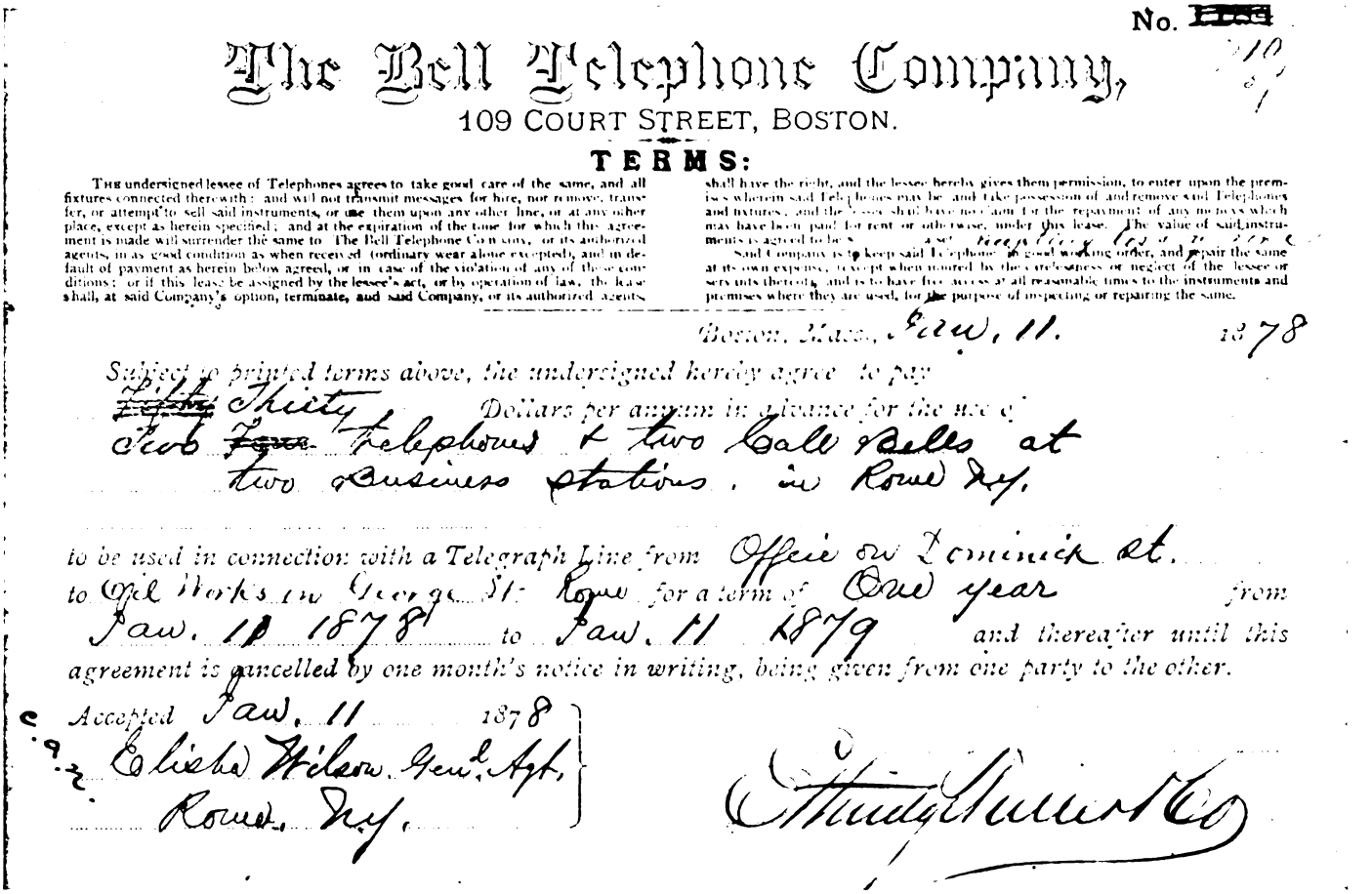

No. [illegible]

The Bell Telephone Company,

109 COURT STREET, BOSTON.

TERMS:

THE undersigned lessee of Telephones agrees to take good care of the same, and all fixtures connected therewith: and will not transmit messages for hire, nor remove, transfer, or attempt to sell said instruments, or use them upon any other line, or at any other place, except as herein specified; and at the expiration of the time for which this agreement is made will surrender the same to The Bell Telephone Company, or its authorized agents, in as good condition as when received (ordinary wear alone excepted), and in default of payment as herein below agreed, or in case of the violation of any of these conditions; or if this lease be assigned by the lessee's act, or by operation of law, the lease shall, at said Company's option, terminate, and said Company, or its authorized agents, shall have the right, and the lessee hereby gives them permission, to enter upon the premises wherein said Telephones may be, and take possession of and remove said Telephones and fixtures, and the lessee shall have no claim for the repayment of any moneys which may have been paid for rent or otherwise, under this lease. The value of said instruments is agreed to be [illegible]

Said Company is to keep said Telephone in good working order, and repair the same at its own expense, except when injured by the carelessness or neglect of the lessee or servants thereof, and is to have free access at all reasonable times to the instruments and premises where they are used, for the purpose of inspecting or repairing the same.

Boston, Mass., Jan. 11. 1878

Subject to printed terms above, the undersigned hereby agree to pay ~~Fifty~~ Thirty Dollars per annum in advance for the use of Two ~~Four~~ Telephones & two Call Bells at two Business Stations, in Rome N.Y.

to be used in connection with a Telegraph Line from Office on Dominick St. to Oil Works in George St. Rome for a term of One year from Jan. 11 1878 to Jan. 11 1879 and thereafter until this agreement is cancelled by one month's notice in writing, being given from one party to the other.

Accepted Jan. 11 1878
Elisha Wilson Genl. Agt.
Rome, N.Y.

Ethridge Miller & Co

Fig. 9—Lease for the Ethridge Private Line

Men I've Met

DURING these past years it has been my good fortune to meet many of the men who have become famous in the business.

First of all, Theodore N. Vail. I remember his coming to Utica about 1884. Our office was at No. 26 Arcade then and we did not have much furniture in it. Father had a desk at the front on one side of the room and Mr. F. G. Wood, our treasurer, had a desk at the front on the other side. I sat at the end of a long table in the middle of the room. Mr. Vail came in and was received as befitted his station as General Manager of the American Bell Telephone Company, but we had no chair to offer him except mine, which was in pretty poor repair. He graciously declined it and walked to the front of the room and sat down in the window, which had one of those old fashioned wide sills. There he sat, first talking with father, then with Mr. Wood, until his conference was over. He looked much as he does today—was not so heavy, but had on the same kind of broad brimmed slouch hat that shows in so many of his recent photographs.

I had several pleasant meetings with Frederick P. Fish, former president of the American Telephone & Telegraph Company. Mr. Fish was a lovable man, and made fast friends with the telephone people wherever he went. On one or two occasions I met John E. Hudson, former president of the American Bell Company, but beyond the fact that he was a man of commanding personality I do not remember much about him. Then there was Edward J. Hall, vice-president of A. T. & T. Co., whom we in Central New York met often and loved well, and Mr. U. N. Bethell, whom I met first in 1888 and have had the pleasure of meeting since in many different ways, and also Mr. Charles F. Cutler, whom I met about this time.

Other Long Distance men who visited us in the early days were A. S. Hibbard, general superintendent; F. A. Pickernell, chief engineer, and A. S. Campbell, superintendent of construction.

Among the Boston men whom I met and got to know well were: Dr. Thomas B. Doolittle, General Sherwin, David B. Parker, C. Jay French, Joseph P. Davis, Thomas D. Lockwood, Hammond V. Hayes, W. S. Ford, Jeffries Wyman.

I want to pause here just long enough to pay tribute to Mr. Wyman's good qualities. He had the administration of the Central and Empire Companies during a very trying period, and as I was associated with him in the work for about three years, I know that he discharged his obligation with the utmost fidelity to the stockholders, to the public, and to the employees. I don't think I ever met a man who was more earnest in his desire to be absolutely fair to all of the employees.

Then among the Western Electric people there were: E. M. Barton, president; H. B. Thayer, vice-president; Albert Salt, sales manager; Ora Bell, switchboard expert.

And during the last few years it has been my rare good fortune to meet and be associated in this great work with Mr. H. F. Stevens, a man whom you all know and respect. His broad human interest in the "old crowd" of the Central, Hudson, and Empire territories, won for him the deep gratitude of a great many people.

And now it is my privilege to meet and associate with the New York Company officials, from the Messrs. Bethell and Mr. Thurber, down through the whole line to men in every division and department of the Company.

As I think over these names and remember what they have stood for and still mean in the telephone business, I am proud to think that I am one in this great Bell army engaged in providing the greatest form of public service ever designed; prouder still to feel that I am connected with the greatest of the Bell children, The New York Telephone Company; and proudest of all to have some small part in this great work right here in Central New York.

W. W. N.

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Historic Washington Market

Begins New Era With Remodeled Building and Up-to-date Telephone Equipment

By A. Hopper, Agent, Dey Street Commercial

IN the good old days of the city of New York, when the financial district was a home settlement instead of a business section of skyscrapers and canyons, Washington Market was born. That was in 1812, long before the days of the telephone and telephone ordering, and at a time when it was quite the proper thing for one to go a-marketing with a basket in the crook of one's arm, and when the head of a household thought it quite within the bounds of dignity to venture forth to select the delicacies that were to grace the family board.

In this period so long ago it was the fashion for the élite to visit Washington Market to shop for all the good things that land and sea provided. These stately gentlemen were attended by servants bearing huge baskets, and it was their habit to stroll leisurely about, selecting with the eye of a connoisseur the special viands that appealed to them; then, their errand being completed, the gentlemen retired to the tavern known as the "Hoof and Horn," on what is now Vesey street, to discuss the topics of the day. Ladies, too, whose names were on the social register, tripped daintily into the market from waiting sedans and selected the delicacies for their families and guests.

Washington Market has lived from that time to this, a period of 103 years. It is one of the oldest markets on the American continent and by virtue of recent reconstruction, the newest. The building that has just given way to the new structure was erected in 1883-4 under the administration of Mayor Franklin Edson. With the continued growth of the establishment under the patronage of the people of both New York and New Jersey, additions were made and improved equipment was added from time to time. No definite plan was followed, as the improvements were made according to the exigencies of the moment and not with any ultimate idea in mind; at last the aisles and passageways became like an old city that had outgrown the plan originally laid down for it. Narrow crooked passages wound in and out and with its towering array of iceboxes and other equipment of every conceivable style, the market presented anything but the orderly appearance its part in the affairs of old New York would have demanded.

THE HAMPER WAY

Actual Reproduction of Photograph Showing Stand of M. J. Sturges, in Washington Market During Christmas Holidays in the Days of Commodore Vanderbilt, Who Is Seen Standing in the Foreground Dressed in Black.

This condition at last became intolerable and the Washington Market Merchant's Association, with the co-operation of the National Housewives' League, decided that the only means of obtaining relief lay in combining the interests of all. A resolution was presented to the city fathers for a complete reconstruction of the market, the merchants whose interests were centered in the market agreeing to take space in the new building.

The most advanced principles of fireproofing and sanitation were to be employed in the construction of the building and everything was to be done for the convenience of the public in shopping and of the merchants in handling their wares.

Besides the Comptroller and the President of the Borough of Manhattan, some of the city officials concerned in the reconstruction were: Col. Frank H. Hines, Superintendent of Public Buildings and Offices, John Boschen, Deputy Commissioner of Public Works, and Sidney Goodacre, Superintendent of Public Markets. H. Higgins was engaged as engineer and architect by both the city and merchants.

The problem of rebuilding the old establishment presented some rather radical features. Each merchant had installed fixtures, representing a considerable outlay. These fixtures, although consistent with the conditions of the old building, were entirely unfit for the requirements of the up-to-date methods of the new building. The expense of the new equipment was great, but the merchants satisfied themselves that the increased business which would follow the improvement in methods and

THE TELEPHONE WAY

Typical Scene in Washington Market Today. Three Adjoining Booths All Busily Engaged in Selling by Telephone. When Trade Is Dull, Business Is Created by Calling Up Customers

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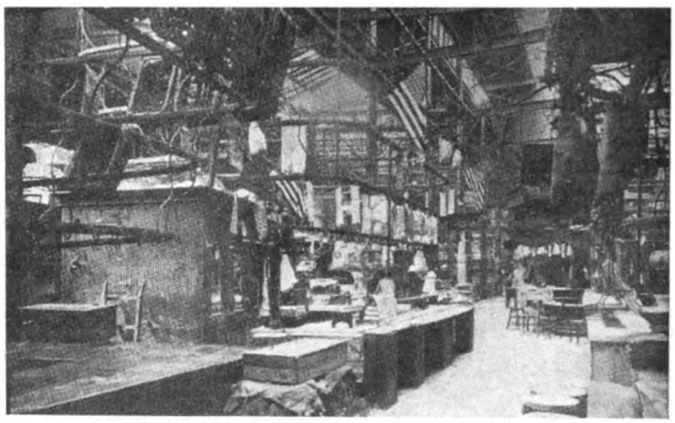
appearance, warranted the additional investment.

It was obvious that the reconstruction plan was for the good of all concerned. and with the approval of Comptroller William A. Prendergast and under the direction of Marcus M. Marks, President of the Borough of Manhattan, work on the new structure began. The plan provided for the City's doing the work of alteration which was common to the interests of all concerned, the City to be reimbursed by increased rentals from the merchants, the merchants agreeing to install fixtures of a uniform type, approved by the City.

The merchants of Washington Market had become so used to the telephone for transacting their daily business that a hurry call was sent to the Telephone Company to make arrangements for equipping the temporary booths. For the market was to be housed in frame shelters on the sidewalk surrounding the old market building, while the work of reconstruction was in progress.

From an Old Print, Showing Washington Market, Surrounding Buildings, and Street Scenes, in 1812, During the War with England



Interior of the Old Washington Market, Showing Congested and Unsanitary Conditions Which Needed to be Remedied

Interior of Sidewalk Shed

On March 10, 1914, it was necessary to interview approximately ninety merchants and secure from them their temporary booth assignments and arrange for the removal of about one hundred lines, the orders all to be made effective as of Monday, March 30, 1914. Orders were forwarded and our Plant Department did such excellent work that we received a letter from the President of the Washington Market Association, thanking us for our prompt attention and the efficient manner in which the removal was handled, adding that when the merchants took up their work at 5 P.M. on Monday, March 30, every telephone was in place ready for use.

Exterior of Washington Market, Showing Sheds Along the Sidewalks Around the Building in Which Business Was Conducted During Alterations

It was expected at this time that the work of remodeling the market would be completed about October 1, 1914, but owing to some modification in the plans, namely, the adding of a mezzanine floor, placing of elevators and other minor changes, the plans were temporarily delayed and the final alterations were not completed until October 20, 1915.

Upon being advised on October 4 that the merchants expected to occupy their new stalls in the remodeled market about October 20, and that they were to have a celebration commencing the week of October 25, the Telephone Company found it was again necessary to get in touch with the telephone committee of the Washington Market Association and secure plans and names for the new booth assignments. There were 87 orders forwarded affecting 82 lines and 89 stations. The difference between the number of subscribers' lines and stations on the two removals is due to the fact that some of the merchants having space in the old market have moved to permanent addresses and have not taken space as yet in the remodeled market.

On October 25, 1915, Washington Market again threw open its doors to the public with an invitation to its patrons to visit its new quarters and celebrate the completion of the remodeled interior. To the old patrons, who knew the market in the past, the wonderful transformation must have been a revelation. In place of the old irregular aisles, timeworn iceboxes, and sawdust-covered floors, a light, airy and spotless interior greets the eye. Every icebox, butcher's hook, counter, and merchant's sign is of uniform size and design. The old splintered wood floor with its sprinkling of sawdust is replaced by tile. An up-to-date refrigerating plant enables the tenants to keep their products in storage without the use of ice and the trouble of securing it. In every glittering white booth, or stall, standard telephone instruments were installed and ready for business. In addition, space had been provided for six white booths to harmonize with the interior of the market, and in these were installed six standard coin-box telephones.

Washington Market has once again come into its own as an institution of the highest type, with the newest idea of

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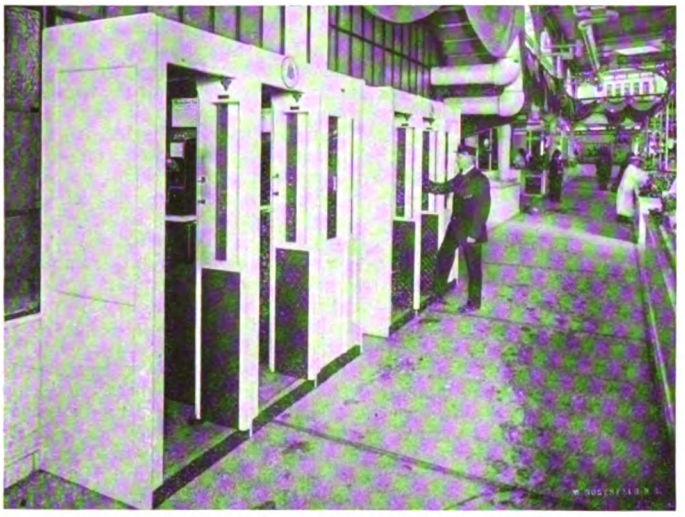
market interior and sanitation. It is prepared to meet the bigger demands of the public, which it is fully expecting to receive, and the housekeeper of to-day, no matter where she is situated, can reap the benefits of these modern sanitary arrangements; for she can reach any one of the Washington Market merchants in a few moments by telephone. Whereas her forefathers went in stately elegance to the Washington Market a hundred years ago, expending a whole morning in the task of shopping, the modern housewife can dispatch this serious business in a few moments over the telephone. With sanitary market conditions assured, as in the reconstructed Washington Market, she has only to lift her receiver, and the highest quality of produce is hers to choose, if not in the grandeur of olden days, at least with the economy of time and effort so indispensable to-day.

Office of George Alexander & Son in Washington Market, Showing Monitor Switchboard Connecting All Departments

The remodeled Washington Market is well worth a visit to confirm this.



Public Telephone Coin-box Booths in Washington Market

Interior of the Remodeled Market

Speedy Sequence Toll Service

RECENTLY a representative of a large New York institution called personally at the Utica central office and stated that he would have occasion to talk to fifty or sixty similar institutions within a radius of one hundred miles of Utica, and he wished to have the calls completed as soon as possible after he gave the word to start. On request he left a list of sixty-three toll calls.

The next morning he called in at 9.15, and stated he was ready to start. At 9.18 the conversation on the first call was started. From that time until 11.55 he talked almost continuously. Fifty-eight of the sixty-three toll calls were completed, the other five being canceled, due to the particular person with whom he wished to talk being out of town. This was an average of one toll call every two minutes and forty-three seconds for a period of two hours and thirty-seven minutes. Between toll calls he placed several local calls so that the actual time consumed on toll calls was slightly shorter.

After he had finished, he called the District Traffic Chief and stated he wished to compliment the operators on their prompt and efficient service.

"Don't Use Big Words"

THE *John Hancock Satchel* publishes an argument for straightforward diction that resembles the argument for peace which the present state of affairs in Europe proclaims with every gunshot. The following turmoil, perpetrated for a purpose by Lorne A. Anderson, in our contemporary of the Insurance world, cries aloud, with action more than with words, the necessity of the simple vocabulary:

In promulgating your esoteric cogitations or articulating your superficial sentimentalities and amicable philosophical or psychological observations, beware of platitudinous ponderosity. Let your conversational communications possess a clarified conciseness, a compact comprehensibleness, coalescent consistency and a concatenated cogency. Eschew all conglomerations of flatulent garrulity, jejune babblement and asinine affectations. Let your extemporaneous descantings and unpremeditated expatiations have intelligibility and voracious vivacity without rhodomontade or phrasmical bombast. Sedulously avoid all polysyllabic profundity, pompous prolixity, psittaceous vacuity, ventriloquial verbosity and vantriloquent vapidity. Shun double entendres, prurient jocosity and pestiferous profanity, observant or otherwise.

In other words talk plainly, briefly, naturally, sensibly. Say what you mean, mean what you say, and "Don't use big words."

If it is not adding insult to injury, we may quote the ancient tale of the traveler who arrived at an inn and instructed the stable boy to put up his horse for the night in these words:

Extricate the quadruped from the vehicle; stabulate him, and donate him with an adequate supply of nutritious aliment, and when the oriel of the morn shall have again illumined the oriental horizon, I shall reward you with a pecuniary compensation for your amiable hospitality.

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The Field Telephone on Europe's Battle-grounds

"WHAT makes the big guns shoot, my chief?" the war reporter said.

"The telephone," the general quoth, "behind, above, ahead."

From church towers, treetops, concealed observation posts on high points of land, even from stationary balloons the "observing officers" telephone their instructions and information to pits and dugouts where the distances are plotted and mathematical calculations of exquisite accuracy are made. From here mysterious numbers are repeated into another telephone, like football signals to the tense, crouching team, and, like the team, the batteries spring into action when the series of signals is complete. Without the telephone the big-gun fire would be like a ship without a compass. The telephone is as much the breath of life to the "Jack Johnsons" and other varieties of monster guns as are the shells themselves.

This fact was brought home to an English audience some time since by Professor Charles R. Darling, in a lecture delivered before the Royal Society of Arts in London. He stated that during the war in South Africa the truth became apparent that the telephone would be a factor of the utmost importance in future wars. Not until the present conflict, however, did anyone suspect that the functions of the telephone would enlarge and extend to the proportions they now hold in the conduct of the war in every quarter.

Professor Darling explained that flag signaling has now been practically abolished as being too conspicuous, and the telephone is used for nearly all communications at the front, not only in the aiming and firing of the guns, but in the transmitting of orders, maneuvering the troops and forwarding the coffee and jam to the trenches.

Because of the terrific roar of battle, which is unthinkably greater in this war than in any previous conflict, the telephone is equipped with a vibrator or "buzzer" which can be used to send messages by Morse code when the din of battle is too great to permit the voice to be heard. The buzzer is used as the "call-up" signal instead of a bell, and is loud enough to waken a man who might fall asleep at his instrument.

The field telephone, as described by Mr. Darling, is equipped with two head receivers. This is to permit two persons to listen in case of an important message, so there can be no possibility of mistake. The use of head receivers leaves the hands of the telephonists free for them to defend themselves if necessary. The whole receiving apparatus can be packed in a small leather case to be worn slung over the shoulder, the weight being only eight pounds.

Professor Darling's great plea was that army telephonists be taught by competent teachers who should volunteer their services, and in this way assure to every unit now undergoing training for the front a competent batch of field telephonists. No fighting machine to-day is fully equipped without such competent telephonists, ready to risk everything to repair one tiny wire on shrapnel-raked plains between the trenches, or do anything else to further and preserve the system of wires.

French Marine Using a Trench Telephone in the Dardanelles

A letter recently published in the New York papers gives a thrilling account of what the work of the military telephonists involves. The letter is from a soldier of the British army, written from the front to his father in New York. It says in part:

We had to run miles of telephone wire—and as this was always getting cut by shell fire you can guess that I and my telephonists had some pretty hot times keeping our communications going. All observation had to be done from our fortified trenches. These were simply hopeless—battered to mere mud heaps and perpetually bombarded by the enemy—and the infantry holding them had a frightful time of it. . . .

All day long we have been shelled up there, and they've also had several trench mortars at work throwing ninety-pound bombs by compressed air. This particular brute is called a minenwerfer, and you can see the bomb coming. It goes up miles in the air, turns a somersault and then begins to drop. One gets an idea after a time as to where it will fall, and then there's a rush for cover. The beastly thing lies on the ground for about two seconds before bursting, and altogether it's a thoroughly nerve-racking brute. . . .

Every hour or so all the German guns would open a prearranged bombardment of this position, and then we got it with a vengeance. You can't imagine how rotten it is. You crouch down in the very bottom of the trench, and it seems as if it's impossible to come through it alive. The air is full of a colossal and deafening rushing sound, the whole earth trembles, parapets and sandbags fall in, and showers of splinters and smashed-up things fly shrieking all over the shop. Every instant the explosions seem to come nearer to you, and finally when you have made up your mind that it's all up with you, the row dies away, and you go back to the ordinary intermittent shelling and bombarding which then seems almost peaceful.

Of course we had plenty of casualties and the gunners didn't escape. The last day I was up there our wire got blown to bits somewhere out in the open behind the trenches for about the hundredth time, so I went out with one of my telephonists to try to repair it. We were in the midst of registering our targets for the attack, and we had to go over some awful places—dead Deutschers everywhere. Suddenly as we crept along a hedge there was a terrific bang, a cloud of smoke, and my man, about fifty yards ahead of me, disappeared entirely. Of course, I flattened out at once. I thought the poor chap had been completely blown to bits, as the shell had burst right at his feet. However, I heard a yell after a few seconds and made a rush for the spot, taking what cover I could, because it looked as if we'd been seen and the Deutschers had fired one of their forward guns at us. I found the poor beggar still alive and conscious, but horribly cut. I made him as comfortable as I could; told him to lie still, because he could be seen and would very likely be shot at again, and then bunked off to try to find a stretcher party.

We were some way from our trenches and in a part that's strictly avoided on account of the attention paid to it by the Deutschers. . . . Luckily I hadn't gone far before I met a sergeant and two men, so I collared him and, sending off one man for the stretcher bearers, the rest of us went back and got my chap out of it. . . . I think he'll recover all right, but he had a rotten time of it.

Not Necessary

MR. WALTER E. DOYLE, Real Estate Department, clips the following from the garden of a contemporary joke-smith:

"Hello! Is this the telephone company? I'd like to have a telephone installed in my house."

"Very well, madame. Would you like a party wire?"

"No, I think not. We don't expect to entertain very much this winter."

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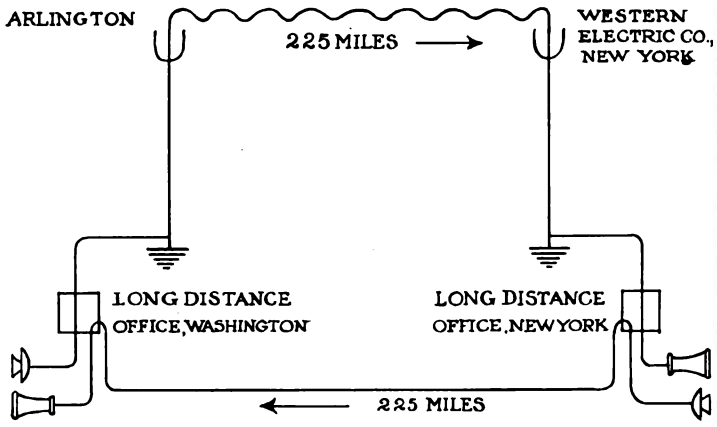
Naval Orders by Bell Wireless Telephone



THE distinction of sending the first Navy order ever given by wireless telephone will forever belong to the Hon. Josephus Daniels, Secretary of the Navy, and to Rear Admiral Usher, U. S. N., belongs the honor of being the first naval officer ever to receive an order by wireless telephone. At three o'clock on Friday afternoon, November 5, Secretary Daniels, sitting at his desk in the Navy Department building in Washington, read the following order to Rear Admiral Nathaniel E. Usher, Commandant of the New York Navy Yard, sitting in his office in Brooklyn:

"Report as soon as practicable after the arrival of the *New York* how soon the repairs recommended on her can be completed."

The Secretary requested Rear Admiral Usher to have a stenographer take this message down.

The Commandant verbally acknowledged receipt of the order, and then the Secretary asked:

"How long before we can get the *California* off the ways?"

"We hope to get her off in about thirteen or fourteen months."

"Well, you will want another ship in a year, won't you?"

"Yes, we will be glad to have one in about a year; we would like one earlier, as we could prepare ahead."

"I will try to do that."

The voice of the Secretary of the Navy traveled from his office by wire to the Navy wireless tower at Arlington, a distance of six and a half miles, then by Bell wireless telephone to the wireless tower of the Western Electric Company on its building in New York, an airline distance of 225 miles, thence by wire again to the Navy Yard in Brooklyn, a distance of four miles, where it was heard and recognized by Rear Admiral Usher.

Rear Admiral Usher spoke over the long distance telephone line to Secretary Daniels, a distance of approximately 225 miles.

The courtesy and coöperation of the Navy Department have been of such great assistance to the Bell System in the development of this great achievement of wireless telephony that Captain W. H. G. Bullard, Chief of the U. S. Navy Radio Service, was anxious to show the Secretary of the Navy the wonderfully successful results that have been accomplished. The Secretary was enthusiastic over the demonstration, and said:

"This is a miracle. We were wont to think miracles ended 1,900 years ago, yet here to-day is this crowning miracle. Soon I shall be able to sit at my desk and give orders direct to commanders of ships upon the ocean."

Mrs. Daniels, wife of the Secretary, talked with Rear Admiral Usher, and, consequently, is the first woman ever to speak over the wireless telephone. She was followed by young Frank Daniels, aged fourteen, who is, therefore, the first boy ever to speak over the new wireless telephone.

Before the close of the demonstration, Secretary of State Lansing came into Secretary Daniels's office and exchanged a few words with Engineer E. H. Colpitts of the Western Electric Company, who was in Rear Admiral Usher's office at the Brooklyn Navy Yard.

In the offices of both Secretary Daniels and Rear Admiral Usher, receivers had been installed, and a number of newspaper men and others were permitted to "listen in" on the conversations.

Before Secretary Daniels spoke, Captain Bullard had a preliminary conversation with Rear Admiral Usher.

The Secretary's wireless message was also heard by the wireless operator at the Navy Yard in Charleston, South Carolina, who was listening in, by the operator at the Great Lakes Naval Station at Chicago, and also at the Boston, Philadelphia and Fire Island Navy Yard Stations.

Among those at Washington who witnessed the demonstration were: Admiral Victor R. Blue, Chief of the Bureau of Navigation; Admiral Griffin, Chief of the Bureau of Steam Engineering; Surgeon-General W. C. Braisted, Rear Admiral David W. Taylor, Chief of the Bureau of Inspection and Repairs; Mrs. Daniels; her mother, Mrs. Worth Bagley; Mrs. Daniels's sister, Miss Ethel Bagley; Frank Daniels, son of the Secretary of the Navy; Captain W. H. G. Bullard, Superintendent of United States Navy Radio Service, and Mrs. Bullard.

Admiral H. T. Mayo, Commander of the Atlantic Battleship Squadron whose flagship, the *Arkansas*, is now at the Navy Yard, and Lieutenant Norris, were the other Naval officials present at Brooklyn.

Telaudit Club

AT a meeting held November 22 a paper was read by Mr. F. S. Robinson, special agent of the Legal Department of the American Telephone and Telegraph Company, on the subject of "Right-of-way of Long Distance Telephone Lines."

"Do you know you're growing handsome, hubbie?"

"Yes; it's a way I have when it gets anywhere near Christmas."—(*Revised.*)

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NOTICE

Main Society.—Mr. J. L. O'Toole, Publicity Department of the Public Service Corporation of New Jersey, will be the speaker at the United Engineering Societies Building, 25 West 39th Street, on December 14, at 8.15 o'clock, sharp. Subject:—"Courtesy in Business." Mr. O'Toole is an interesting speaker and will provide an evening of great pleasure.

Hudson Section

THE 1915-1916 season of the Hudson Section opened very auspiciously on Friday evening, October 29. The Section was exceptionally honored in having for its speakers Mr. F. H. Bethell and Mr. H. F. Thurber, vice-presidents of the New York Telephone Company. The 300 members present were 300 live-wires of enthusiasm and they gave marked evidence of the warm regard and loyalty which they hold for the Company and its officials.

Mr. Bethell and Mr. Thurber talked informally and their remarks were timely and brimful of interest and inspiration. Mr. Bethell discussed various features of business conditions and among other things pointed out the effect that the unusual prosperity now attending the manufacture and transportation of certain commodities is having upon the telephone business. He spoke also of the functions of the Public Service Commissions, of their duties to the public and to the corporations and of the ultimate purposes of regulation.

Mr. Thurber spoke of the problems the Company must meet in order to maintain plant and equipment at a high point of efficiency not only for the rendering of good long distance service but local service as well. He also related interesting incidents in connection with the recent wireless telephone experiments.

Mr. J. A. Jamison, Jr., then spoke on the opportunities the Society afforded. Following the meeting a "get-acquainted" hour was enjoyed while an orchestra entertained with good music.

Central Section

THE Central Section held its first meeting of the season in Syracuse on the evening of November 1. The Papers and Meetings Committee provided an excellent program of entertainment consisting of music furnished by the Blue Bell Quartet and the recently organized Blue Bell Orchestra.

Mr. W. C. Sexsmith, district manager of Binghamton, was the speaker of the evening and told some very interesting incidents of his twenty-six years' experience in the telephone business.

The Papers and Meetings Committee reported that a very good program had been arranged for the coming year and that the orchestra and quartet would have something to offer at most of the meetings. If this first meeting is any indication of what is to follow, the Central Section is assured of a very pleasant and successful season.

Western Section

BUFFALO

ABOUT one hundred members attended the October meeting of the Western Section, held at the Telephone Building, Buffalo, on the fourteenth.

After Chairman Stephan called the meeting to order, a motion was made and carried, providing that instead of nine meetings throughout the year, but five meetings be held; one every other month.

Superintendent Michael J. Regan, of the Buffalo Police Department, was the speaker of the evening. The Superintendent talked on the Police Department and its work and for two hours he held his hearers spellbound with most interesting stories of police life. The Superintendent is a humorist and a philosopher and his witty remarks from time to time caused much laughter.

Superintendent Regan has been on the force thirty-five years. He has seen many officers come and go in that long period. He said a policeman nowadays must not only be physically fit, familiar with all laws and ordinances, and well informed as to the city's geography, but he must exercise common sense in dealing with the public. He must not be too officious or too anxious to make arrests. He must resist the many temptations he is subjected to, and must at all times be courteous and accommodating to people who ask him a hundred and one foolish questions. "Believe me, a bonehead cannot last long on the police force," said the speaker.

Police work, said Superintendent Regan, is as dangerous, if not more so, than war. In war, you generally know where the shots are coming from. In chasing a burglar up a dark alley, you cannot tell where they may come from. Accomplices of the thief may shoot at you from any direction. A policeman takes his life in his hands every time he goes after a desperate crook. Nobody cares to give him any assistance. Citizens say he is paid to do this kind of work and they yell, "Safety first," and hide behind the nearest corner.

The Superintendent spoke interestingly of the finger-print method of identification of criminals. He declared it the most sure and satisfactory system that has ever been devised. A man's facial outlines may change materially in the course of a few years, but his finger prints, never.

After the Superintendent finished, a vote of thanks was tendered to him. He raised a laugh by saying he thought he ought to thank the telephone men for permitting him to appear before them. He declared the telephone men were among the best fellows he had ever met.

After the meeting, light refreshments were served.

ROCHESTER

THE Rochester Chapter of the Society held a meeting on Friday evening, October 15.

It was decided to hold no meetings in December and February, thus reducing the number of meetings for the year from nine to seven.

The speaker of the evening was Superintendent Emil Schmidt, of the Rochester Fire Alarm Telegraph, who gave a very interesting address on the working of the Fire Alarm Telegraph System of Rochester. Complete equipment was set up and demonstrated. A vote of thanks was extended to Superintendent Schmidt. Light refreshments were served by the Entertainment Committee to about sixty members.

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Transcontinental Dinner at Jamestown

Address by J. S. McCulloh, and Demonstration of Transcontinental Line Awaken Great Enthusiasm

THE most successful dinner of many years in Jamestown was held on November 3, by the Jamestown Board of Commerce, with the cooperation of the New York Telephone Company. The affair was widely advertised as the "Telephone Dinner of the Board of Commerce" and the features of the evening were the speech by Mr. J. S. McCulloh, general commercial superintendent of the New York Telephone Company, and the demonstration of the Transcontinental Bell Telephone Line following.

When the plans were first announced it was thought that a hall seating not more than 400 would be plenty large enough, but as the news crept out regarding the arrangements made for this remarkable affair, the demands for tickets increased so rapidly that it became necessary to find a larger meeting place, and the hall in the Eagle Temple was finally secured. At the utmost limit this hall would seat 508 people for a banquet, and to show the enormous interest aroused, one need only say that there were 508 tickets sold and 508 people sat down to the banquet.

Transcontinental Dinner, Jamestown, N. Y., November 3, 1915

The principal speaker was Mr. McCulloh, who took as his subject the telephone business, and in a masterful way sketched the development of the telephone business in this country, bringing in many local references, pleasing in the extreme to the Jamestown people who were so interestedly listening. The Mayor of Jamestown, the Honorable Samuel A. Carlson, also made a short address, and Special Agent W. F. Schmidt lectured as he presented the moving pictures of the Transcontinental Line.

In introducing his remarks upon "The Miracle of the Telephone," Mr. McCulloh alluded to the story of the founding of Jamestown, telling in a few vivid sentences of the journey of William Prendergast across six States in search of a home in Louisiana, and of his persistent memory of the little lake in western New York, along whose shores he had passed, until he finally retraced his steps a thousand miles to find it again and settle there. After touching briefly on the commercial importance of Jamestown, which is the second city in the country in respect to the manufacture of office furniture, Mr. McCulloh told the fascinating story of the early development of the telephone industry revealing something of the power of imagination and unremitting labor that has been put into every improvement. As a beacon light to progress the words of Mr. Vail, written to Mr. H. W. Pope in 1879, were cited: "What we want to do in every case is to adopt the best system, and that we think we have. Then if there is anything better we should, of course, want to adopt it." Mr. McCulloh's comment upon this was: "And this has been to this day, and now is, the guiding principle of the American telephone industry." He explained, too, what this policy of advancement and improvement has constantly meant in the dismantling and discarding of equipment and material that had not reached the limit of its useful life, and touched upon the marvels of some of the plant, notably the common battery switchboard with the convenience it means to the subscriber in calling, and the cable that carries 1,200 pairs of conductors within a diameter of two and seven-eighths inches.

Mr. McCulloh divided the forty years of the life of the telephone into four periods of ten years each. From 1876 to 1886 was the pioneer period: "It was a period of experiment and invention in which there were no experts, no authorities and no traditions."

The period from 1886 to 1896 was designated as the "realization period." "During these years came the multiple switchboard, copper wire, the bridging bell, girl operators, underground cables, metallic circuits, the common battery and the long distance lines."

Of the "expansion period," from 1896 to 1906, Mr. McCulloh said: "Public telephone (or pay station) business was developed and the Blue Bell became the sign of the times all over the country. Toll line service was extended, a service which has done more, possibly, than any other one thing to abolish isolation and to bring all inhabitants of this broad country of ours into one big neighborhood, a 'universal service.'"

Mr. McCulloh continued: "The last ten-year period—from 1906 to the present time—we may refer to as the 'universal service period.' . . . It is the era of standardization and efficiency, the era of long lines, of startling achievements in long distance talking, and now only recently, the achievement of transcontinental and transoceanic wireless telephony." In this period, too, comes the work of the Employees' Benefit Fund Committee, and the Stock Purchase Plan. These Mr. McCulloh described, and apropos of the latter he said: "One of our stockholder-employees up in Chautauqua County was delivering telephone directories one warm June day. The load was heavy and he was getting rather tired, when he turned to his brother delivery man and made this statement: 'Gee! Ain't it a devil of a note when us stockholders have to go 'round and deliver these books.'"

In closing, the speaker showed what the system meant to Jamestown and, after paying a glowing tribute to the employees, assured Jamestown that if "application and coöperation and hard

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work can do it Jamestown will continue to be, in point of its telephone service, second to none throughout this broad land."

During the demonstration of the Transcontinental Line, which followed, some fifteen or twenty prominent Jamestown citizens talked to various connections and friends in San Francisco, and the local interest held so well that this immense crowd sat patiently from half-past six until after eleven o'clock.

Never has there been so successful an event in Jamestown and from the amount of favorable comment made to the various officials of the Telephone Company who were present after the close of the demonstration it is well assured that this public exhibition of what universal telephone service means has gone far to establish on a friendly, amicable basis the New York Telephone Company in the minds and hearts of hundreds of Jamestown citizens.

Rochester Rotary Club Hears N. C. Kingsbury at Transcontinental Demonstration

A MEETING which will always be remembered in the history of the Rochester Rotary Club as one of the most successful and unique ever attempted, was held on the evening of Tuesday, November 16.

District Manager W. J. O'Hea, who is president of the Rochester Rotary Club and District Governor of Rotary Clubs in this section of the United States and Canada, arranged for his local club a demonstration of the Transcontinental Bell Telephone Line.

The Rotary Club was peculiarly fortunate in obtaining as the only speaker of the evening Mr. N. C. Kingsbury, vice-president of the American Telephone and Telegraph Company. Mr. Kingsbury took as his subject "The Development of a System," and in a brief, compelling manner sketched the history of telephony from the first day when a voice was transmitted over a wire by Professor Bell.

Very impressively Mr. Kingsbury drew the striking contrast between the time when Alexander Graham Bell spoke over the first telephone to Thomas A. Watson, in the attic room in Boston, and the time when that conversation was duplicated by the same men, on January 25, 1915, with Mr. Bell in New York and Mr. Watson in San Francisco. The marvelous work done by the pioneers in the telephone industry was described in what was termed by Bishop Hickey as the most illuminating address ever delivered in Rochester. The most striking feature was the warning which was sounded in regard to the passage of laws governing public utilities. Mr. Kingsbury pointed out the significant fact that, unless the public service corporations with their invested capitalization of over twenty-eight billions of dollars were treated justly, the investments of everyone would be in constant jeopardy.

The importance of ready communication by telephone, telegraph and railroad between nations was emphasized, especial stress being laid upon the influence of language. As the nearest example of this, Mr. Kingsbury took the contrast between our situation in regard to Mexico and that in regard to Canada. Communication with Canada, the speaker said, is particularly easy, because of the identity of language. No thought of trouble has been manifest on either side of a boundary line four thousand miles long, although there is no fort or line of defense between the countries, because both sides understand each other. On the Mexican line, on the other hand, patrols have to be constantly on the alert, to forestall or put down serious trouble, and heavy garrisons have to be maintained. This is largely because of the difference in language of the Mexicans and Americans, which makes communication between them so difficult. If the same language were spoken, the difficulties would be far less serious. In fact, a universal language, and readier means of communication, in the opinion of Mr. Kingsbury, would have gone far toward preventing the great conflict now raging in Europe. If the public service corporations of England and the Continent had been developed to the extent of those in the United States the world might to-day be at peace.

Following Mr. Kingsbury, one of the pleasing features of the evening's entertainment was the presence of Mr. Tom Karl, formerly the famous tenor with the Bostonians. Mr. Karl, who is well along in his 70's, sang through one of the telephone instruments his old favorite, "Drink to Me Only With Thine Eyes." His voice, still ringing with some of the fire and enthusiasm of the old days, was heard by all of the people, not only in the hall at Rochester but at the Exhibit of the A. T. & T. Company in San Francisco.

The demonstration which followed was completely successful, and more than one prominent Rochester citizen was called to the Speaker's table at the request of someone in San Francisco to converse over a distance of 3,800 miles (the circuit was routed through New York) with friends and relatives on the Pacific Coast.

The attendance was the largest ever obtained at a Rotary Club dinner in Rochester, and there were over 500 representative Rochester business men who sat with the small receivers glued to their ears from about 9.30 until well after 11.30 with no thought of losing interest.

District Manager O'Hea, after the demonstration was over, was the recipient of hundreds of cordial congratulations on the success of one of the most unusual affairs ever held in Rochester.

Centralized Testing Bureau Anniversary

THE Centralized Testing Bureau of the New Jersey Division celebrated its second anniversary Monday, October 25, 1915. The day was spent with the usual amount of pairs cleared and failures prevented that has marked the existence of the Bureau.

The Centralized Testing Bureau started locating pairs, as they failed, with the Troublemen, Saturday, October 25, 1913, with leads connecting eleven offices. To-day there is a total of thirty-two, a gain of nearly 200 per cent. covering an area of approximately 750 square miles.

In the past two years there have been nearly 1,200 actual cases of cable failures prevented; an average of two a day. That is, one or two pairs were located (with the coöperation of the wire chief's forces) that have upon inspection resulted in the finding of a damage or flaw that at a future date would have caused a failure.

The Boy Scouts' motto is: "Do *one* good turn every day." The Centralized Bureau Scouts have gone them "one better," as their reports show an average of *two* a day.

In addition to the failures prevented, there have been 4,000 pairs cleared and reported to the Record Department as O.K.

H. BLOOD, *Centralized Testing Bureau.*

Safety First.—"Dearest," he said, "can't I get you a nice diamond ring for Christmas?"

"No, darling," whispered the far-seeing young thing; "I will take the ring now. Let Christmas bring its happy surprises, just as usual."—*The Evening Star (Brooklyn Evening High School).*

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Friars' Song Heard 3,400 Miles Away

THE Friars of New York laid the cornerstone of their new monastery at Nos. 108 and 110 West 48th street, on October 21, with ceremonies the echoes of which were heard in San Francisco.

The chief event and one which will live long in the memory of all the 500 Friars assembled, was a Transcontinental Telephone Demonstration from their club house at No. 107 West 45th street, to the Exhibition Hall at the Panama-Pacific Exposition in San Francisco, where there were assembled a large number of distinguished San Franciscans and fellow Friars.

Transcontinental Telephone Demonstration at the Friars' Club, New York City, October 21, 1915

Mr. H. W. Casler, Division Advertising Manager of the N. Y. Telephone Company, presided, and after a few brief remarks about the interesting features in connection with the construction of the line, he introduced the Honorable George B. McAneny, President of the Board of Aldermen of New York City, to the Exposition Representative, Mr. George W. Peck, who introduced Mr. McAneny to the Honorable James Rolph, Jr., Mayor of San Francisco. Greetings were exchanged and congratulations extended to each of the audiences assembled. Representing the assembled Friars, Mr. Fred Niblo talked with Mr. Frank L. Brown, one of the Exposition Directors. Mr. George Cohan, the well-known actor, and Abbot of the Friars, talked to Honorable Wm. E. McCarthy, Chairman of the Finance Committee of the San Francisco Board of Supervisors, and Mr. E. P. Howard, President of the New York Press Club, greeted Mr. C. E. Parsons, President of the San Francisco Press Club. Other speakers who talked with fellow Friars in San Francisco were Mr. James J. Corbett and Mr. John J. Gleason, secretary of the New York Friars' Club.

Mr. Irving Berlin, the song writer, sang his original composition, "Alexander's Ragtime Band," and in return a phonograph selection, "Then You'll Remember Me," was played from San Francisco. After some other conversations, the "Friars' Song" was sung for the edification of the listeners 3,400 miles away.

Three cheers were given by the New York Friars for Mr. Peck and the group of San Franciscans who were gathered in the American Telephone and Telegraph Company's exhibit at San Francisco, and three cheers came back from the San Francisco end for the Chairman and members of the New York Friars' Club.

Telephone Float Finest in Jersey City Parade

THE finest float in the Industrial Parade, held by the Jersey City Chamber of Commerce on October 21, was declared by a unanimous vote of the judges to be that entered by the New York Telephone Company. The illustration shows more clearly than could a detailed description with what care and what a true eye for the essential requirements of an effective parade float the Company's entry was worked up. The float was twenty-one feet long and the contrasting masses of "bell blue" and white utilized the entire space with eminently successful results.

A large blue bell, five feet in diameter and six feet high, was the feature of the float, and concealed beneath it was a set of electric chimes played by Salesman Hoff, of the Jersey City office. Mr. Hoff, entirely hidden, rendered popular airs on his unique instrument, and the spectators of the parade readily grasped the significance of the ringing bells and their connection with the telephone idea.

N. Y. Telephone Co.'s Prize-winning Float in Jersey City Industrial Parade

Constant applause and favorable comment greeted the float all along the line of march, and the hospitable reception accorded it by the crowds and by the judges, was reëchoed by a number of prominent telephone men who saw it. The float was considered by the latter to be the best telephone float ever displayed by our Company.

I will honor Christmas in my heart. I will live in the Past, the Present, and the Future. The spirits of all three strive within me. I will not shut out the lessons which they teach.

DICKENS.

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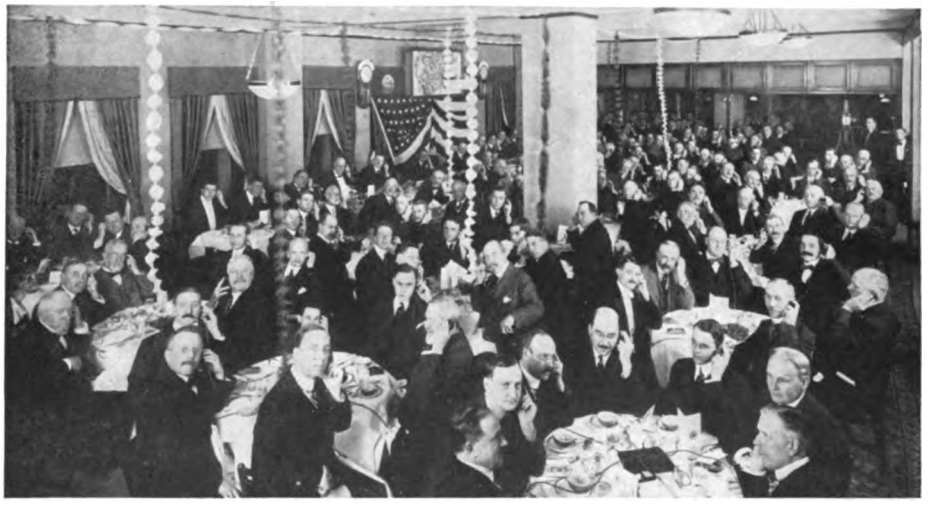
Newarkers Greet San Franciscans

Board of Trade Members Converse with Friends on the Pacific Coast

A HISTORY of the development of the telephone in the City of Newark with a concrete illustration of one of the greatest achievements in telephony—conversation across the continent—was furnished to members of the Newark Board of Trade on the occasion of a banquet at the Down Town Club on the evening of November 22. The affair was the most remarkable of its kind ever given in Newark, and proved to be the most successful Transcontinental Telephone Line demonstration yet held.

The Board of Trade, an organization composed of about 1,400 of the leading business men of the City of Newark, conceived the idea and arranged for the event through Local Commercial Manager E. W. Wollmuth. It was possible to accommodate but 600 people in the quarters of the Down Town Club, and the dinner was, therefore, handled on a subscription plan, "first come, first served" being the rule. Over 250 requests for reservations could not be granted, because of lack of space.



Telephone Banquet of the Newark Board of Trade

It was a notable gathering which assembled for the occasion. As one of the speakers said, the men present were the very essence of Newark's business life. Commercial men, professional men, clergy, all were attracted by the unique program arranged for the evening.

After dinner Mr. A. V. Hamburg, president of the Board of Trade, made a few fitting remarks and introduced Mr. J. S. McCulloh, general commercial superintendent of the New York Telephone Company, the speaker of the evening. Mr. McCulloh, who was referred to by Mr. Hamburg as a fellow Jerseyman, was received with applause. He spoke on "Expansion and Development of the Telephone Business in Newark." His speech was of a historical nature and particularly appropriate, in view of the fact that Newark is to celebrate, next year, the 250th anniversary of its founding.

Motion pictures were then shown of interesting scenes along the route of the Transcontinental Telephone Line. These were explained by Special Agent W. F. Schmidt of the Advertising Department.

It was just nine o'clock when the Transcontinental Line was opened by Local Commercial Manager Wollmuth, who was in charge of the Transcontinental program. Mr. Wollmuth called the roll of wire chiefs of the various cities through which the line passes, and this proved to be a feature of the evening, as it graphically illustrated the route of the line and gave every listener a vivid idea of the stupendous amount of equipment required for a transcontinental telephone talk.

President Hamburg was the first one to converse over the line. He talked to Mr. Robt. Lynch, vice-president of the San Francisco Chamber of Commerce, exchanging felicitations and discussing the celebration of Newark's 250th birthday.

Hon. James F. Fielder, governor of New Jersey, followed Mr. Hamburg, and asked to speak with Col. Mahlon Margerum, of Trenton, who up to recently was in charge of the New Jersey exhibit at the Panama-Pacific Exposition, Colonel Margerum was immediately located at the St. Francis Hotel, San Francisco, from which place he conversed with Governor Fielder. Governor Fielder also chatted pleasantly with Mr. Archibald Tuttle, brother of Congressman Tuttle of Westfield, and with Mr. Charles A. Vogelsang, Panama-Pacific Exposition commissioner.

Hon. Thomas L. Raymond, mayor of the City of Newark, talking with Mr. Edward Rainey, personal representative of Mayor Rolph of San Francisco, was particularly anxious to know if there was a Common Council in the metropolis of the Pacific Coast. Mr. Rainey assured the Mayor there was only a Board of Supervisors with which Mayor Rolph got along fairly well, and upon learning this, Mayor Raymond congratulated San Francisco's executive on his good fortune.

The conversation between Hon. J. Franklin Fort, ex-Governor of New Jersey, and Hon. Walter D. Mansfield, of the San Francisco Bar, was especially enjoyed by the listeners, inasmuch as each of these gentlemen asked the other some pertinent questions concerning his politics at the present time. Any embarrassment which might have resulted was avoided by tactful changing of the subject.

Mr. Uzal H. McCarter, president of the Fidelity Trust Co. of Newark, told Mr. Kenneth R. Kingsbury, vice-president of the Standard Oil Company, of California, about his recent endeavor to reach San Francisco by way of the Panama Canal. Mr. McCarter stated that while he understood that one of the objects of the Panama-Pacific Exposition was to celebrate the opening of the canal, he could not join heartily in this celebration because he found the Panama Canal closed and was forced to walk across the Isthmus.

The same spirit of jollity characterized the conversations of Mr. Curtis R. Burnett, president of the Down Town Club; Mr. Forrest F. Dryden, president of the Prudential Life Insurance Company; Mr. Levi Weingarten, president of Weingarten Bros.; and other prominent Newarkers and Californians.

Hon. Franklin Murphy, ex-Governor of New Jersey and chairman of the 250th Anniversary Celebration Committee, was present and while a most interested listener, was unable to talk because of a very bad cold.

Among the features of the program were the "Roar of the Pacific" accompanied by motion pictures, and several vocal selections. Mr. Howard Pascal, a tenor soloist of prominence, sang "Hello 'Frisco," with an encore of "Silver Threads Among the Gold." Victrola renditions from San Francisco, "A Little

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Grey Home in the West" and the "Star Spangled Banner" were received with loud acclamations of approval.

At the conclusion of the evening's program, after the line had been used for one and one-half hours for the exchange of felicitations and pleasantries, Mr. David Grotta, one of the Board's Directors, made a motion that President Hamburg appoint a committee of three to draft suitable resolutions expressing the appreciation of that body for the splendid opportunity afforded it on that occasion. This motion, which was seconded by Mr. R. C. Jenkinson, who paid a glowing tribute to the Bell System, was unanimously carried.

The enthusiasm displayed by those present—all big business men accustomed to big things, was noteworthy, everyone seeming to realize the greatness of the achievement of Transcontinental telephony and to esteem it a privilege to take part in a demonstration of its possibilities. The feeling of the members of the Board of Trade was summed up in the comment of President Hamburg: "This is the biggest thing Newark ever had."

Mr. Dusenbury Makes Longest Telephone Call Ever Received at Paterson

MR. THOMAS DUSENBURY, a retired employee of our Company and a Pioneer, made the first call ever put through from San Francisco to Paterson, N. J. Mr. and Mrs. Dusenbury were attending the Pioneers' Convention and visiting the Exposition, when Mrs. Dusenbury surprised her intimate friend, Mrs. Neer, in Paterson, by speaking to her over the Transcontinental Line. The call was made at 7.45 o'clock in San Francisco and 10.45 in Paterson, and was a complete surprise to Mrs. Neer, whose astonishment was augmented by the perfection of the transmission. "I could hear Mrs. Dusenbury talk as plainly as if she were downtown in Paterson," she told a newspaper reporter. The local paper describes the call in its various interesting phases, in detail, saying in part:

The conversation of the two ladies is a local exemplification of one of the greatest achievements in the telephone world, that of carrying the human voice across an entire continent.

Keep Your Pad and Pencil Handy!

A PROMINENT subscriber of Mt. Vernon, N. Y., in conversation with Mr. James W. Bellinger, chief clerk, Traffic Department, spoke thus on a point of etiquette in the use of the telephone:

The person whose duty it is to take orders by telephone should at all times be provided with the necessary pencil and memorandum paper to avoid delay and inconvenience to patrons. Yet a person is often requested to wait when calling the telegraph office to transmit a message by telephone, or when he calls his grocer or his butcher to deliver an order for provisions. Every person has the right to expect prompt attention from those whom he favors with his patronage. It is a form of imposition to request him to wait unnecessarily because the person whose business it is to receive orders by telephone is unprepared with the proper facilities.

Telephone employees may have opportunities to call the attention of telephone users to this too common occurrence, which is really discourtesy, and whether or not this opportunity comes, every employee of the Company can incorporate it into his own code of Telephone Courtesy.

To Our Cortland Operators

CONSCIENCE funds aggregating millions of dollars represent the accumulated remorse for concealed acts of dishonesty on the part of anonymous individuals whose scruples have suddenly become active, but it is rare that the conscience of a telephone kicker becomes so active as to inspire reparation in verse. Such was the case, however, in Cortland, N. Y., where the service not only overcame the natural propensities of the kicker, but drew from him an enthusiastic tribute. Like the founders of conscience funds, the writer does not divulge his name, but the following communication speaks well for his repentant state of mind:

The Girl We Call "Hello"

There's a certain kind of people, very useful, yet obscure,
Who receive small approbation from the public, I am sure,
Yet the service which they render none of us could well forego,
Still 'tis rare we kindly speak or think of the girl we call "Hello."

The public simply take her as a cog in one great wheel,
Placed there for their convenience, to promote the common weal,
And it's rare indeed a kindness to these faithful girls we show,
But oftentimes we "cuss" aloud the girl we call "Hello."

We grasp our phone, a number give, and should there be delay
We frankly are ashamed to own the awful things we say.
We seem to think that ours must be the only call, you know,
When perhaps some forty others, quite insistent, call "Hello."

But still though "kicked" and "cussed" about, you always find her sweet.
We don't know how she does it, we confess to give up beat.
But when our days on earth are done should we to heaven go,
We sure will find a multitude of girls we call "Hello."

Just a Tribute to the "Hello" Girls.

By A. KICKER, Cortland, N. Y.

Strand Brackets

Developed in Long Island

THE Long Island Plant Department seems to be constantly on the alert, devising the best ways of meeting peculiar conditions, and improving methods. Here is the latest contribution from this progressive Department:

It is necessary, in many cases, to attach twisted pair to highway cable suspension strand. It is poor construction to make such attachments, owing to their inaccessibility, but, in many cases, they cannot be avoided because of right-of-way or physical conditions.

In pole blocks all twisted pair that do not span directly from the house to the pole over the subscriber's own property are attached to the strand. Such attachments are accessible, and future right-of-way trouble is avoided. In Long Island, for all cases where twisted pair is attached to strand, the strand brackets shown in the illustrations are used. From one to eight twisted pair can be attached to one bracket. Standard bolts and standard insulators are used.

Any suggestions for improvement will be appreciated.

C. H. BASSLER,
Supervisor of Aerial Plant, Long Island.

Long Island Type of Strand Brackets

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Community Spirit of Christmas

A Path Out of a Rut

CHRISTMAS time is almost here and already the Spirit of Good-Fellowship begins to prance about in a more lively manner—for he is apt to take to strolling, until he smells the fragrance of spruce and hemlock about the cities. Then he moves gayly about with everybody and gets an impetus for the rest of the year, for the sight of a Christmas tree, whether in piles along the docks and in front of the stores, or peeping, tinsel-trimmed from windows, or, best of all, standing bright with lights, in the heart of the town, is enough to set Good-Fellowship to dancing.

Christmas means so many things that it isn't possible to sum them up or even suggest them, but Good-Fellowship carries one thought about Christmas which he keeps dropping here and there and everywhere, till one is obliged to take hold of it and see why he is so insistent about leaving it where we can't help stumbling over it. He dresses it up in a hundred different costumes, but it is always the same big idea and it holds the heart of Christmas. It is the fact that we aren't just members of our families, we aren't just units in splendidly working telephone exchanges or in well-ordered Plant, Commercial, or Accounting offices; we are each one of us factors in the life of our community. This community spirit, the sense of some relation besides our immediate personal and business connection, is what makes the all-pervading charm of Christmas time. It is the enlarging of sympathies, the outreaching and the growth that it means to everyone who feels it sincerely, that carries its spell on into the rest of the year, and makes each one of us more competent in our work, because it makes us bigger and capable of fuller understanding and more complete development. We are very prone to become narrow if we let ourselves neglect this realization of some responsibility as members of the community. To give ourselves over to it at Christmas time helps keep us out of the fatal rut which so easily limits our growth.

The active sprite, Good-Fellowship, spreading this favorite thought of his about among us, has chosen a myriad ways to make us feel it, for it isn't knowing it that counts—we all know it well enough—but feeling it, and Christmas of all times is the time for good-feeling and not just good-knowing. For the last few years he has put up huge Christmas trees, outdoors, in the heart of cities and towns all over the country. Red, green, blue, and yellow electric lights all over the tree twinkle and

Lights Twinkle and Sparkle Out of the Darkness

sparkle out of the darkness and set warm glows here and there on the snow. A big bright star or a cluster of lights at the topmost pinnacle of the tree shines out the invitation for everyone in town to come and gather round. And on Christmas Eve they do. The eager little sprite draws a big crowd around the tree and Christmas carols ring out over the snow. Then is Good-Fellowship supremely happy. For is there anything that so warms the heart and radiates the joy of life as singing an old song, together with hundreds of others who love it too?

Then, in the smaller towns especially, there are the waits.

> The waits stand out in the snow
> And they swing their lanterns bright;
> The waits stand there in a row,
> And they carol, Heart's Delight!

Trooping up and down the quiet streets, their footfalls muffled in the snow, go the bands of young people singing the Christmas melodies, because it is Christmas Eve, in the town as well as inside those holly-wreathed windows. Jolly little snatches of songs and the beautiful old carols sound faintly in the distance, or come nearer till you can recognize the words as well as the tunes:

> Be merry all, be merry all,
> With holly dress the festive hall.

Or,

> Above thy deep and dreamless sleep
> The silent stars go by.

The big community spirit of Christmas is abroad. Good-Fellowship plucks everyone by the sleeve and dashes on ahead. He reminds people on every hand that Christmas is bigger than their conception of it. He takes them out of themselves, and sends them on through the year, if they join heartily with him, with a new energy and a new interest.

Toe the Mark

WHAT Mr. J. S. McCulloh, general commercial superintendent, said about the "telephone girls," in his address at the Board of Commerce dinner in Jamestown, will be an incentive to every "telephone" girl, whether of the Traffic or other departments, to make sure she is toeing the splendid mark which is the standard.

Mr. McCulloh's tribute was:

> And I like to think of the telephone girl and the big part she plays in the job of binding people and communities together. The girl with her high qualities of intelligence, tact, and ability to think and act quickly in time of emergency, independently of mechanical rules, adds the delicate human touch necessary to perfect a system that is reliable under all possible conditions. I cannot pass this point without paying high tribute to the telephone girl, which every orthodox telephone man knows is her due.
>
> The public, as a whole, is coming to realize the tremendous influence and value of the woman in business. Nowhere is this more potently felt than in the telephone service. Telephone

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men indulge in no mawkish sentimentality on this subject, but we fully appreciate the splendid loyal and consistent service which our telephone girls render. In times of stress and trial the telephone girl is found at her post, standing by and lending a hand, and, with her quick-witted intelligence, directing the tense, electric flashes which mean the warning of danger and the saving of lives.

Our Christmas Work

"NOW comes the bright time of the year" when spare moments are devoted to the engrossing delights of "Christmas work." Embroidery hoops are no longer lying idle in bureau drawers, while we are at home, and in the rest and lunch periods in the operators' sitting-rooms the magazines open naturally to the pages which bear the fascinating legends, "Christmas Suggestions," "The Welcome Gift," and "Put Yourself in Your Christmas Card." The last alluring title says more than it means, and touches the crux of the whole charm of Christmas. Putting yourself into your Christmas work, whatever it is, is what makes Christmas real. But this is a digression—those pages are bound to lead one astray.

Never so much as at Christmas time does the work of the telephone girl, whether operator or clerical worker, seem so full of meaning, so supremely beautiful in its intimate human service. While our more leisurely neighbor is busy knitting bright wool scarfs to lay at the altar of friendship or fashion, we are knitting lives together, weaving a fabric of human intercourse. To the operator the romance and wonder of this comes most directly, for it is through the actual movements of her swift, deft hands and mind that the web is wrought, as the artist and the poet show us on our Christmas cover. But in order that she may weave human destinies on the loom of the switchboard, the whole organization of the Company must be behind her to make it possible. Cashiers, accountants, stenographers—the girls in every department, are every one instruments in this inspiring work. This is our Christmas work, and we use for it a pattern as wide as the continent, wrought in the designs of life itself.

The Greatest Instrument of Communication

WHICH one of us doesn't remember the period of our primary school days when it was the trial of our teacher's life that all her wriggling charges would insist on "communicating" with their neighbors? We can feel with double acuteness her despair, when the teacher of some forty energetic imps, after explaining the marvels of modern scientific inventions and dwelling at some length on the wonders of the telephone, asked, "Now, children, tell me what instrument of communication we have that we didn't have fifty years ago."

Up went a hand, flourished violently in the air.

"Well, Johnny?"

"Us," came the triumphant reply.

At Christmas play and make good cheer,
For Christmas comes but once a year.

Tonic Indispensable

HOW many of us really take an hour of exercise a day? Walking is good. But is it enough? At any rate, let it be a *brisk* walk, not a desultory ramble. Exercise, like work and recreation, isn't much good if it hasn't any "pep." Dame Fashion decrees we shall skate this year. When health, fun, and fashion go hand in hand, what more can we ask?

Electrical Prosperity Week

Sample W. E. Co. "Electrical Prosperity Week" Advertisement

THE electrical industry, through a nation-wide movement, has inaugurated a great publicity campaign, culminating in Electrical Prosperity Week, November 29 to December 4. Among the prominent participators in this campaign is the Western Electric Company. The idea of Electrical Prosperity Week is to boost "Doing It Electrically," and largely to stimulate the buying of electrical gifts for Christmas.

The advertisement reproduced above is one of the many useful suggestions to the Christmas giver which were put out by the Western Electric Company as a part of the Electrical Prosperity Week campaign.

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A Vacation Hike to Washington

By Miss Kathryn Graham, Chief Operator, Atlantic Highlands

THERE are two weeks in the year to which telephone operators, like other mortals, look forward, vacation. Usually one is glad of a quiet two weeks in the country after the busy summer season. But the last vacation time found my chum and myself ready for anything except resting in the country. I am Kathryn Graham, chief operator of Atlantic Highlands, and my chum is Helen Kelly, of the Matawan exchange. We decided to go on a "hike," and being good patriots our first thought was Washington. Everyone wants to see the Capitol. We did, too, also the scenery along the way. When we spoke of our intention all our friends laughed. No one thought we could do it, and we were called crazy.

On a bright Sunday morning in late October we boarded the train at Matawan en route for Philadelphia. We had no desire to see New Jersey scenery, perhaps because there is none to see down this way. We arrived in "Philly" early in the afternoon, and began to "hike," making Chester our aim for the night. The "scenery" is well built up between these cities. It was only about four o'clock when we marched into Chester. But where to secure accommodations for the night was the question. We are both good Christians, as well as telephone operators (I have heard that it is easier for a camel to go through the eye of a needle than for a telephone operator to enter the Kingdom of Heaven), and what more fitting than that we should ask of the priest? But our reception was exceedingly cool. Instead of a fat, jolly priest, as we anticipated, a sour-faced housekeeper came to the door and informed us that she did not care to make our acquaintance. We turned away, blessing all housekeepers, only to meet a few dozen Sunday-school boys, who immediately surrounded us. They pointed to our high shoes and short skirts, and pulled at our knapsacks. We began to fear for our lives when two reporters came to our rescue. I could not begin to tell the questions they had asked when Miss Kelly exclaimed, "Get me away from here and I'll tell you anything!" They directed us to a hotel, where we spent the night.

In the morning we journeyed on through a long stretch of woods. Here in the thickest of the forest we met a band of gypsies who insisted upon telling our fortunes. I was so frightened that all I remember is that I am to marry a blond man and have six children.

We passed through Wilmington over the barren lands where new roads are being made between Newark and Havre-de-Grace, arriving at Aberdeen in the evening. Here we found lodging with a little old maid who has a horror of bridges. "And did you cross bridges?" she shrieked, and when we told her the number we had crossed the poor lady nearly fainted. We learned later that her sister had spent the night with friends so that we might have accommodations.

In the morning we started on the longest walk of our "hike." Just what the Southerner will eat, and at what time he will eat, is still a mystery to me. We started out early enough, but all we could get in the line of breakfast was an oyster fry. I have a righteous hatred of oysters, so without breakfast we began the thirty-one mile stretch to Baltimore. We did have a few crackers and one stale bun, but these we gave to a rather ferocious looking negro whom we met in the woods. He was coming from Baltimore, "and a right smart walk it is, young ladies." Just about noon, when we seemed nearly starving, we came to a lonely farmhouse. The farmer's wife had nothing but a piece of cake. She said the baker hadn't come along yet. We thanked her, took the cake, and when out of sight chucked it into the ditch; it was three weeks old. A bit farther on we met the baker. The only thing he had in his cart was a jelly roll. We took it. We next came upon a man pressing cider, who gave us all we could drink. So sustained by jelly roll and cider we entered Baltimore. We spent the night at the St. Charles and took advantage of all the comforts it afforded. Thursday we spent most of the day seeing the sights of Baltimore, but started on in time to reach Relay in the evening. The scenery here is beautiful, Relay being in the heart of the Maryland Hills. We stayed that night at the Sterling House, and it was here that we had the biggest "feed" of our journey. Dinner enough for six, served in a dining-room like a refrigerator. We had to gobble everything before it froze. The fruit we tucked away in our haversack for the next day's tramp.

We did not linger much on the last "haul" to Washington, except at Laurel, where we saw the famous racetrack. At Laurel we met a leading suffragette of Washington, who invited us to call upon her. She thought we were suffragettes, too!

Friday evening we made the capital, where we were besieged by reporters. We woke the next morning to find ourselves famous as "Helen of Troy" and "Kathryn of Oregon." The papers announced that we were on the hunt for "eugenic soulmates." In spite of reporters who continued to annoy us we spent five days in the city visiting all the interesting places.

Before leaving the capital we called on our suffragette lady. On the fifth day we went to Norfolk, where we took the Old Dominion Line steamer for New York. We made the acquaintance of Captain Nelson, and were treated royally all the way.

Miss Kelly and I will always look back on our "hiking" trip as one of the jolliest times of our lives, and thank the good people who helped to make the time so "jolly."

Laurels for Operators

THE following letter addressed to Miss Minnie Bikely, chief operator at Owego, N. Y., was sent by a lady residing in Philadelphia, who usually spends her summers in Europe, but who on account of the war took up her summer residence this year in Owego:

I want to express to you as the head of the telephone operators in Owego my warm appreciation of the service rendered me during the summer and fall months. The operators have been without exception courteous, kind, prompt, and in every way most efficient. I have only praise for them, and would like to thank each one personally for the excellent service they have given me. It has been a real pleasure to use my telephone, and I surely have the kindest thoughts of you all.

During her residence in Owego the lady said that in all her experience in this country she had never received more satisfactory telephone service than in Owego, and it was incomparably superior to anything she had ever experienced abroad. Such a testimonial from one so well qualified to speak, and the additional courtesy displayed in the letter which she wrote, have given great pleasure and satisfaction to the operating force in Owego.

Similarly enthusiastic appreciation of good service, in Oneida, is evinced in a letter from Mr. Wm. E. Braisted, pastor of the Oneida Baptist Church. Mr. Braisted writes:

Mr C. H. Hartzell, D. T. C., Utica, N. Y.

MY DEAR MR. HARTZELL: Please permit me again to assure you, and through you Miss Conley and the telephone operators under her direction of my sincere appreciation of the universal courtesy, especially during the last few months, when, as Chairman of the Executive Board of the Honeywell Evangelistic Campaign, the calls to me, and mine to others, have been "too numerous to mention," as they say in auction bills.

I am glad to put this in this way, as I tried to say it in the tabernacle Sunday night.

I had before that expressed the same to one of our young women there, Miss Mildred Perkins, asking her to say the same to the others.

I should gladly thank each operator in person and you all if I could.

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Points for a Sales Talk

THE telephone as a direct sales agent needs only to be tried to be proved, and it is often more important to give a telephone number than a street number when advertising for customers. Many an inquiry will be made by telephone that would never be made if a long and tiresome trip were necessary to secure information. An advertiser who has tried and proved this is the M. Morgenthau, Jr., Company, "'Phone 3093 Rector." We reproduce one of their advertisements, which was used in connection with a recent auction sale of real estate at Edgemere, L. I.

'PHONE 3093 RECTOR

Ask for special

Edgemere

representative

Let him explain the money-making possibilities offered by

Concluding Session

of the

ABSOLUTE AUCTION

THIS FRIDAY NIGHT

and

THIS SATURDAY NIGHT

At 8 o'Clock Sharp

under the big Tent on Edgemere Ave.

173 lots and 3 houses

REMAIN AND MUST BE DISPOSED OF

They are right near Edgemere Station, on the ocean side of the R. R., between Far Rockaway and Arverne. Remember, only 10% cash down required. Balance 2½% monthly. In three years your property is

FREE AND CLEAR

'PHONE 3093 RECTOR

Representative on the property day and night

FITZ-JAMES E. BROWNE

Will sell for

M. MORGENTHAU, JR., CO.

AUCTIONEERS

111 Broadway

A few days after the sale, Mr. M. Morgenthau, Jr., the president of the auction company, wrote our company a letter, in which he said:

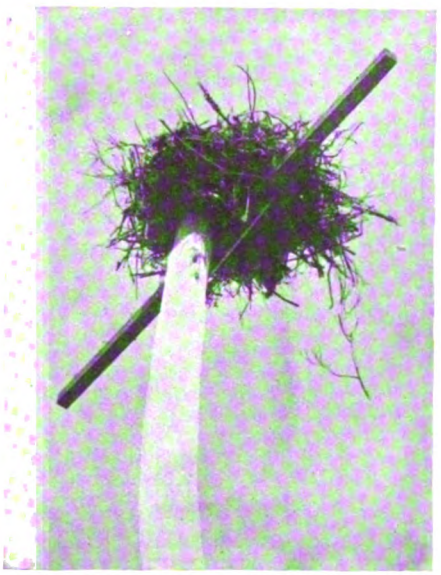
Inclosed herewith you will find an advertisement which we used in connection with our recent auction sale at Edgemere, L. I. It may interest you to know that the returns from these ads were far beyond our expectations and that two of our men were kept busy all day answering telephone inquiries. Moreover, these inquiries were of the very best kind, from people thoroughly interested in our offering and well able to invest. We were able to give them all the information regarding the property *over the telephone* and tell them just how to come to Edgemere, and some of these inquirers actually came and bought.

As far as we know this is the first time that this method of securing buyers for real estate at auction has been tried and we think you will be glad to know of its success. Selling by telephone is surely only starting and this little experiment of ours may suggest further fields for development.

This was a very clever advertisement, because it gave the newspaper readers the easiest avenue of approach to information regarding the sale. In office or home, they could turn without discomfort to the telephone, call the number, and secure information.

The telephone is being used more and more every day to make sales, but in this case, the telephone was used to disseminate information which later resulted in sales. This is indeed one of the best methods of selling by telephone.

Fishhawks and Telephone Lines



A Long Island Trouble-hunter Troubled Trouble When he Tumbled This Fish-hawk's Nest from the Top of the Telephone Pole.

TELEPHONE troublemen are the victims of more dilemmas than there are listings in the telephone directory. Small boys, bears, bees, and fishhawks are among the trouble-makers against which it is impossible to guard. The accompanying illustration, sent in by Mr. G. G. Nason, Plant Department, 24 Walker street, shows a fishhawk's nest on the top of a telephone pole on the Menantic Road, Shelter Island. Although undoubtedly a delightful home site, we trust it proved rather too temporary to be widely advertised as desirable.

We live in deeds, not years; in thoughts, not breaths;
In feelings, not in figures on a dial.
We should count time by heart throbs. He most lives
Who thinks most, feels the noblest, acts the best.

P. J. BAILEY.

A Novel Method of Advertising

WHILE riding in a trolley from her home to the office, a Market supervisor was carelessly reading the different advertisements displayed over the heads of the passengers. Suddenly her lagging interest was aroused to a keen pitch by a strangely familiar phrase which greeted her roving eyes. Looking again, but with a closer attention, she read, "*Call Mulberry* 713 *and hear the Voice with the Smile.*"

From a telephone point of view the voice with the smile was plain enough, but what did Mulberry 713 have to do with it? Pondering this question over in her mind, the supervisor arrived at the office, where she told her superior of what she had seen. For a while suggestions as to the meaning of this strange device were varied and numerous, but no reasonable solution seemed forthcoming, when someone suggested calling the number and finding out. The number was accordingly called and a hearty laugh ensued when a voice, smiling indeed, answered, "Columbia Steam Laundry, Columbia Steam Laundry."

The girls still contend, though, that someone is trying to steal their thunder.

E. MACK,
Assistant Chief Operator, Market.

Organization Changes

New Jersey Division

Plant Department

John G. Lowden, formerly switchman, appointed chief switchman, Mulberry central office, Newark district.

Adelbert G. Wright, formerly switchman, appointed chief switchman, Waverly central office, Newark district.

Nicholas Bradford, formerly lineman, appointed line foreman, Newark district.

Commercial Department

Since November 1, 1915, the headquarters of M. J. Moloney, district commercial manager, Northern district, have been 170 Paterson street, Paterson, instead of 8 Erie street, Jersey City. E. J. Higgins, with headquarters at the former address, continues as local commercial manager, Paterson.

Western Division

Commercial Department

J. S. Wilkin, acting local manager, Brockport, appointed local manager, LeRoy, vice H. C. Follett, transferred to the Rochester local office.

D. V. Bradley, salesman, formerly of Brockport and Wellsville, will report to Mr. Wilkin.

Brockport is discontinued as a local district and will hereafter form a part of the LeRoy district, which now comprises Caledonia, Bergen, Churchville, Pavilion, and Scottsville.

Central Division

Traffic Department

Miss Helen Foley appointed chief operator at Whitesboro vice Miss Mary Soper, resigned.

Mrs. J. Morse appointed chief operator at Corning vice Mrs. Pearl Dalrymple, resigned.

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The TREND of REGULATION

By R. V. Marye, General Attorney

Evils of Competition

THE opinion of the Chief Commissioner of the Board of Railway Commissioners of Canada, on September 2, 1915, in a proceeding to frame an order granting connection to certain independent telephone companies with the Bell Telephone Company, states, among other things, that telephone duplication is merely a waste of money and simply makes for inconvenience, and that no telephone company, whether Bell or independent, should be permitted to construct in territory already served by another company. He states further that experience has shown that when the Bell Company has lost business as a result of support of a local institution, rates have gone up after the local company has secured sole possession of the field, and, moreover, that the rates of the Bell Company compare favorably with rates on government systems, and, so far as rates are concerned, competition is unnecessary.

Losses from Competition Cannot Be Included in Valuation for Rate Making

THE Public Service Commission of Oregon, in a proceeding to fix the rates of the Hood River Gas and Electric Company states, in its opinion dated July 14, 1915, that since said company had from its organization engaged in reckless cutthroat competition and had voluntarily established and maintained rates which were not remunerative and had practiced unjust discrimination, any losses which were suffered were unquestionably chiefly due to the owners of the utility and could not be held to represent the cost of developing the business or a shortage of fair return pending the building up of the business.

Contracts Fixing Rates Not Binding on Commission

THE Missouri Public Service Commission, in the case of John A. Knott *et al. vs.* Southwestern Telegraph and Telephone Company, on July 29, 1915, holds that since the regulation of rates is governmental and continuing and rests primarily in the State, it cannot be hampered by contracts between public service corporations and individuals, and that any contracts of such a corporation establishing unreasonable rates or permitting unjust discrimination or being in any way inimical to the public interests are not impaired within the meaning of either the State of Federal constitution through the enactment by the State in its paramount authority of legislation abrogating such contracts; and that the provisions of the State constitution authorizing the Legislature in the exercise of its police power to pass laws forbidding infringement upon the equal rights of individuals or militating against the well being of the State is paramount to any rights under any contract between individuals.

Payment in Advance

THE Missouri Public Service Commission, on June 14, 1915, in passing upon a proposed schedule of rates of the Farmers' Telephone Company, stated that it would approve a rule requiring payment for service by new subscribers within the initial rate area of the local exchange, three months in advance at the time of installation and thereafter one month in advance, and that for new rural subscribers for whom the company furnishes equipment beyond the initial rate area, payment might be required at the time of installation for not exceeding twelve months in advance and for not exceeding six months thereafter.

Contracts for Definite Periods Not Binding

A NUMBER of subscribers of the Lincoln Telephone and Telegraph Company protested against a proposed discontinuance of grounded service by said company and a cancellation of the rates for such service, alleging that the company had contracted with them that rates for grounded service would not be disturbed for a period of five years. The Nebraska Railway Commission, on July 15, 1915, overruled these objections, stating that such a contract was not binding, being contingent upon the authority of the Commission to change it and that the Commission could abrogate it at any time that the public interest might require.

Deposits as Security for Service

IN passing upon the application of the Western United Gas and Electric Company for the approval of its rules for service, the Illinois Public Utility Commission, on August 5, 1915, held, among other things, that equity to both the utility and the consumer demands that the utility be authorized to require a reasonable cash deposit as security for the prompt payment of consumer's bills and accordingly approved a proposed rule of the company requiring that every present customer, not an owner of real estate, who has not paid his bills for the previous two months, may be required to furnish either a cash deposit or a property owner's guarantee as security for present and future unpaid bills, and that payment of the bills in arrears should not exempt the consumer from furnishing such security. The rule required further that the amount of the deposit should equal twice the consumer's average bill and that the property owner's guarantee should consist of a written agreement whereby it would agree to hold the company harmless from any and all losses which might occur to it in the event of the consumer's failure to pay for services.

Extension of Service. Utility May Require Guarantee of Fair Return

THE School Board of Beloit applied to the Wisconsin Railroad Commission for an order compelling the Beloit Water, Gas and Electric Company to build certain extensions of its electric service. The Commission decided, on September 20, 1915, that although the extensions sought were necessary for adequate service, it would not be reasonable to require the company to build them unless the School Board would guarantee an amount sufficient to afford a fair return on the investment involved in the construction, and that such guarantee should extend and continue until the actual revenue derived from the extensions at the prevailing rate equals the amount of such guarantee.

Free Service Illegal

IN its investigation of the rates and practices of the Dakota Central Telephone Company, the South Dakota Railroad Commission, on June 19, 1915, held that a contract by which a telephone company furnished to its rural subscribers free service which it withheld from its town subscribers was illegal and void and that, moreover, the supplying of free service to the subscribers of one company while charging for similar service to the subscribers of another company was likewise violative of the law. The Commission states further that a contract by which two companies agreed that the rural subscribers of each should have the privilege of telephoning without extra charge to all of the subscribers of the other, but that the city subscribers of each should have the right of telephoning without extra charge only to the rural subscribers of the other, was expressly violative of the provision of the statute forbidding discrimination. The policy of the State of South Dakota is that services rendered by common carriers shall be paid for in cash and in cash only, and therefore free services are prohibited. It was upon this theory that the Anti-pass law was framed and it was the intention of the Legislature in the passage of that Act to absolutely prohibit free service.

Free Toll Service During Competitive Period

THE Mountain States Telephone and Telegraph Company of Montana, having bought out its competitor, the Billings Automatic Telephone Company, discontinued certain free toll service formerly accorded patrons of the Billings Company and placed in effect a toll charge of ten cents. The Farmers' Committee of Laurel petitioned the Montana Commission to compel the company to reëstablish the free toll service on the assumption that by reason of the fact that it had been voluntarily granted it must have been profitable. The Commission dismissed the petition on July 26, 1915, holding that a telephone company could not be compelled, upon buying out a competitor, to continue free toll service inaugurated during the period of competition since, in addition to the fact that such service necessitates a separate investment, it is unlawful because discriminatory.

Advertisements of Competitors in Telephone Directory

A SUBSCRIBER of the Cleveland Telephone Company, named McHugh, applied for an injunction, restraining the company from carrying an advertisement relating to the business of a competitor and former employee and containing the name and telephone number of the competitor at the top of the page next to that on which the plaintiff's name and telephone number appeared, contending that the publication of the advertisement was entirely foreign to the business of the company and that, even if the advertisement was proper, it was improperly placed with the intent to deceive persons seeking the plaintiff's name in the directory. The Supreme Court of Ohio, in July, 1915, sustained the Court of Appeals of that State in reversing a judgment in favor of the plaintiff rendered by the lower court.

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NEW YORK TELEPHONE COMPANY

GENERAL OFFICES, 15 DEY ST., NEW YORK

U. N. BETHELL, President
F. H. BETHELL, Vice-President
H. F. THURBER, Vice-President
FORD HUNTINGTON, Vice-President
WALTER BROWN, Secretary & Treasurer
J. L. SWAYZE, General Counsel
C. T. RUSSELL, General Solicitor
R. V. MARYE, General Attorney

J. A. STEWART, General Manager
J. S. WILEY, General Auditor
E. F. SHERWOOD, Chief Engineer
H. C. CARPENTER, Engineer
T. P. SYLVAN, Asst. to Vice-President
E. A. GURNEE, Asst. Treasurer
WALDRON HOPPINS, Asst. Secretary
J. S. KENNEDY, Secretary, Employees Benefit Fund Committee.

COMMERCIAL DEPT.

J. S. McCULLOH
General Com'l Supt.

W. F. BAKER
Asst. to Gen'l Com'l Supt.

A. D. WELCH
General Com'l Engineer

R. S. SCARBURGH
Advertising Manager

J. LENIHAN
Collection Attorney

PLANT DEPT.

G. C. ALLEN
General Supt. Plant

A. W. ALLEN
Supt. Buildings & Supplies

J. C. RENNARD
Real Estate Manager

W. T. GURNEE
Plant Accountant

TRAFFIC DEPT.

J. H. GORDON, Jr.
General Supt. Traffic

R. H. BOGGS
Traffic Engineer

H. G. GREENE
Manager Public Telephones

A. D. SCOVEL
Mgr. Traf. Inspection, M-B

ACCOUNTING DEPT.

P. O. COFFIN
Auditor

J. A. KENNEDY
Auditor of Disbursements

A. J. NORMAN
Auditor of Receipts

C. H. GROVER
Supervisor of Methods

Manhattan-Bronx & Westchester

J. R. POLLOCK
Division Com'l Manager
15 Dey Street

Manhattan-Bronx & Westchester

BURCH FORAKER
Division Plant Supt.
24 Walker Street

Manhattan-Bronx

H. J. SCHULTZ
Division Supt. Traffic
15 Dey Street

Westchester

M. H. ORTH
Division Supt. Traffic
40 South Fifth Ave.
Mt. Vernon

Lower Manhattan

L. F. HALSTED
Division Auditor Receipts
221 E. 37th Street

Upper M.-B. & Westchester

E. A. GIRARD
Division Auditor Receipts
2033 Fifth Avenue
New York

Long Island

H. W. DRAKE
Division Com'l Manager
81 Willoughby Street
Brooklyn

Long Island

P. D. HONEYMAN
Division Plant Supt.
547 Clinton Avenue
Brooklyn

Long Island

G. L. YATES
Division Supt. Traffic
81 Willoughby Street
Brooklyn

Long Island

A. W. DEAS
Division Auditor Receipts
81 Willoughby Street
Brooklyn

New Jersey

H. G. KERR
Division Com'l Manager
281 Washington Street
Newark

New Jersey

I. J. THORP
Division Plant Supt.
281 Washington Street
Newark

New Jersey

G. H. MERRILL
Division Supt. Traffic
281 Washington Street
Newark

New Jersey

C. H. LEONARD
Division Auditor Receipts
281 Washington Street
Newark

Hudson

J. A. JAMISON, Jr.
Division Gen'l Manager
Telephone Building
Albany

Hudson

E. H. POWLEY
Division Plant Supt.
74 Chapel Street
Albany

Hudson

E G. ANDERSON
Division Supt. Traffic
74 Chapel Street
Albany

Hudson

J. P. HILL
Division Auditor Receipts
Telephone Building
Albany

Central

D. C. COX
Division Gen'l Manager
321 Montgomery Street
Syracuse

Central

F. J. CHESTERMAN
Division Plant Supt.
321 Montgomery Street
Syracuse

Central

H. H. KENNEDY
Division Supt. Traffic
321 Montgomery Street
Syracuse

Central

L. A. WILCOX
Division Auditor Receipts
321 Montgomery Street
Syracuse

Western

C. A. SPAULDING
Division Com'l Manager
Telephone Building
Buffalo

Western

P. O. JACOBS
Division Plant Supt.
Telephone Building
Buffalo

Western

J. J. WELCH
Division Supt. Traffic
Telephone Building
Buffalo

Western

H. W. GAUL
Division Auditor Receipts
Telephone Building
Buffalo

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Courtesy New York World

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